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Palen Solar Project

(formerly Palen Solar Power Project)

DOI-BLM-CA-060-2017-001-EIS

DRAFT

Supplemental Environmental Impact Statement/ Environmental Impact Report/ Land Use Plan Amendment

Index No. BLM/CA/PL-2017/012+1793+2050
CA State Clearinghouse No. 2011054002

VOLUME 1: MAIN TEXT

October 2017



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Aspen
Environmental Group

235 Montgomery Street, Suite 935
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Fax: 415-955-4776
Emily Capello email: ECapello@AspenEG.com

TRANSMITTAL

TO: Denver Library, Bureau of Land Management

FROM: Emily Capello

DATE: 10/26/17

PROJECT: Palen Solar Project

MESSAGE: Please find enclosed the Notice of Availability and one hardcopy of the Draft Supplemental EIS/EIR/LUPA for the Palen Solar Project.

If you have any questions or require additional information, please contact me at (415) 696-5312.

Thank you.

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RIVERSIDE COUNTY
PLANNING DEPARTMENT

Charissa Leach, P.E.
Assistant TLMA Director

COUNTY OF RIVERSIDE – NOTICE OF AVAILABILITY FOR A DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMANTAL IMPACT REPORT / LAND USE PLAN AMENDMENT

Date: October 27, 2017

Project: Draft Supplemental Environmental Impact Statement/Environmental Impact Report/Land Use Plan Amendment (State Clearinghouse No: 2011054002 / Index No. BLM/CA/PL-2017/012+1793+2050)

To: Responsible and Trustee Agencies, Interested Organizations, and Individuals

Lead Agencies:

County of Riverside
TLMA Planning Department
4080 Lemon Street, 12th Floor
Riverside, California 92502-1409

Contact Person: Jay Olivas
Phone Number: (760) 863-7050
Email: **jolivas@rivco.org**
Website: **http://planning.rctlma.org**

Bureau of Land Management
1201 Bird Center Drive
Palm Springs, CA 92211

Contact Person: Mark DeMaio
Phone Number: (760) 833-7124
Email: **mdemaio@blm.gov**
Website: **https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=98930**

ALL COMMENTS MUST BE RECEIVED NO LATER THAN December 11, 2017.

A DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT / ENVIRONMANTAL IMPACT REPORT (Draft SEIS/SEIR) for the Palen Solar Project (PSP or Project) proposed by EDF Renewable Energy (EDF RE), as described below, has been completed and is now available for public review. A solar project at the Palen site was initially proposed in 2007, and a series of environmental documents have been prepared since that time. To address the new solar technology and project configuration being proposed, a Supplemental EIS/EIR was prepared for the PSP. The Draft SEIS/SEIR evaluates potentially significant adverse environmental impacts that could be associated with the Project and identifies project components, mitigation measures, and project alternatives that would avoid, reduce, or eliminate significant impacts. The Draft SEIS/SEIR does not set forth policy for the County of Riverside (County) or the Bureau of Land Management (BLM) about the proposed project's desirability. Rather, it is an information document to be used by decision-makers, public agencies, and the public.

Project Location: 10 miles east of Desert Center and north of I-10 (Figure Attached)

Project Description: EDF RE is seeking to revise the pending Right-of-Way (ROW) application CACA-48810 from a solar power tower project to a 500 megawatt (MW) alternating current (AC) solar photovoltaic (PV) panel facility. The Project would be located on approximately 4,200 acres of federal public land administered by BLM in Riverside County. Once completed, the facility would deliver power to the Southern California Edison Red Bluff Substation, located about 4 miles west of the project site. In addition, EDF RE has proposed to enter into a water supply contract with the County. The contract would authorize the purchase of construction water from wells operated by the Riverside County Service Area on private land in Lake Tamarisk, at Desert Center, approximately 10 miles west of the Project. Maps and data may be viewed online (**https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=98930**).

i.d. #88073072

Significant Impacts on the Environment Anticipated as a Result of the Proposed Project: The Draft SEIS/SEIR identifies the following issues as having one or more significant effects on the environment, despite the incorporation of all feasible mitigation. As a result, adoption of a Statement of Overriding Considerations will be required pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Protection Act (NEPA) in order for the project to be approved.

- Project Specific: Air Quality
- Project Specific: Cultural Resources
- Cumulative and Project Specific: Vegetation Resources
- Cumulative and Project Specific: Visual Resources
- Project Specific: Wildlife Resources

Public Review Period: The County of Riverside is the Lead Agency under CEQA and the BLM is the Lead Agency under NEPA. Both Lead Agencies are holding a joint public review period of the Draft SEIS/SEIR, during which time the public and interested parties are invited to comment on the Draft SEIS/SEIR for the Project. Comments on the adequacy of the analysis and the appropriateness of the project may be made in writing or email, indicating the section of concern. Comments may include additional or alternative mitigation measures to those proposed in the document. The project name and number should be noted on all correspondence and the comments should indicate if you would like to be notified of public hearings. Copies of Project documents, environmental impact report and technical appendices are available upon request. At this time, public hearings have not yet been scheduled.

The County and the BLM will hold a public meeting on the Project **on November 14, 2017, from 4 to 6 pm** at **UCR Palm Desert Center Room B200** located at 75080 Frank Sinatra Drive, Palm Desert, CA 92211.

Please note that the public comment period for the Draft SEIS/SEIR is October 27, 2017 to December 11, 2017. All comments must be received no later than 5:00 pm on December 11, 2017. Comments received late, pursuant to state law, may not be considered. Comments may be submitted electronically via email at: **PalenSolar@blm.gov** and/or **jolivas@rivco.org**. Comments may also be submitted by mail to: Palen Solar Project, c/o Aspen Environmental Group, 235 Montgomery Street, Suite 935, San Francisco, CA 94104.

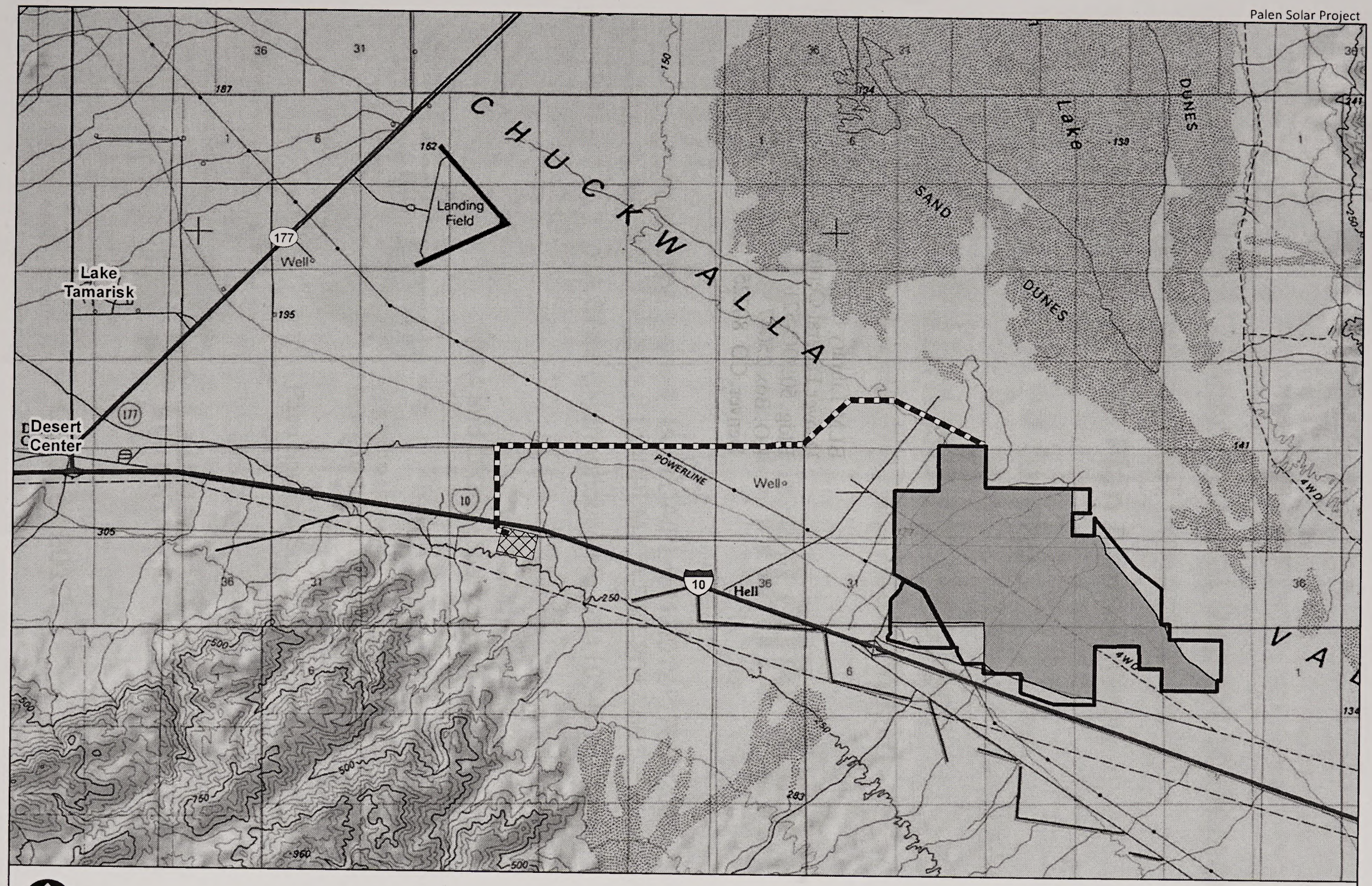
Locations Where the Draft SEIS/SEIR May be Reviewed: The PSP Draft SEIS/SEIR may be reviewed online at **https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=98930** or viewed in-person at the Riverside County Planning Department offices (4080 Lemon Street, 12th Floor, Riverside, CA 92501; or, in eastern Riverside County: 77-588 El Duna Court, Suite H, Palm Desert, CA 92211). The following locations will also have copies of the Draft SEIS/SEIR available for public review.

Lake Tamarisk Branch Library
43880 Lake Tamarisk Drive
Desert Center, CA 92239

Palo Verde Valley District Library
125 West Chanslor Way
Blythe, CA 92225

For directions on obtaining copies of project documents, environmental impact report / environmental impact statement, and technical appendices, see project website at **https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=98930**.

If you have any questions please contact Jay Olivas at (760) 863-7050 or email **jolivas@rivco.org**.



N

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Proposed Project

- Property Boundary
- Fenceline
- Red Bluff Substation
- Gen-Tie Line

Palen Solar Project Location

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for the

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(formerly Palen Solar Power Project)

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CA State Clearinghouse No. 2011054002

NEPA and CEQA Lead Agencies:

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Palm Springs–South Coast Field Office

RIVERSIDE COUNTY
PLANNING DEPARTMENT

October 2017

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Palm Springs–South Coast Field Office
1201 Bird Center Drive
Palm Springs, CA 92262

October 2017

Dear Reader:

Attached for your review and comment is the Draft Supplemental Environmental Impact Statement/Environmental Impact Report/Plan Amendment (Draft Supplemental EIS/EIR) for the Palen Solar Project (PSP) issued by the Bureau of Land Management (BLM) Palm Springs–South Coast Field Office and the County of Riverside. The BLM prepared this document in accordance with the National Environmental Policy Act of 1969, as amended; the Federal Land Policy and Management Act of 1976, as amended, implementing regulations; the BLM's Land Use Planning Handbook (H-1601-1); the California Environmental Quality Act of 1970; and other applicable law and policy.

In 2008, a previous project proponent, Palen Solar I, LLC, filed a Right-of-Way (ROW) application for the Palen Solar Power Project (PSPP), which would have used solar parabolic trough technology to generate electricity. This application and associated plan amendment were analyzed through a Draft EIS/Plan Amendment, published in 2010, which was made available for an 105-day comment period, and a Final EIS/Proposed Plan Amendment, published in 2011. [1]

This Supplemental EIS/EIR supplements the May 2011 PSPP Plan Amendment/FEIS and September 2010 Staff Assessment by more fully evaluating a different solar technology — solar photovoltaic (PV) panels — as the principal energy generating system for the project. The associated required plan amendment component has not changed from the previously analyzed PSPP proposal. If approved, this PV project will result in an approved amendment to the 2011 ROW application for the original PSPP for solar energy production. The Supplemental EIS/EIR for the development of the Palen Solar Project and supporting information is available on the project web site at:

https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=68122.

The Lead Agencies encourage the public to provide information and comments pertaining to the analysis presented in the Supplemental EIS/EIR. We are particularly interested in feedback concerning the adequacy and accuracy of the proposed alternatives, the analysis of their respective management decisions, and any new information that would help the agencies evaluate impacts. In developing the Final Supplemental EIS/EIR, which is the next phase of the planning process, the decision maker may select various management decisions from each of the alternatives analyzed for the purpose of creating a management strategy that best meets the needs of the resources and values in the project area under the BLM multiple use and sustained yield mandate.

As a member of the public, your timely comments on the Supplemental EIS/EIR for the Palen Solar Project will help formulate the Final Supplemental EIS/EIR. Comments will be accepted for 45 calendar days from October 27 to December 11, 2017 following the Environmental Protection Agency's (EPA) publication of its Notice of Availability in the Federal Register.

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[1] The BLM published a Draft Supplemental EIS for the Palen Solar Electric Generating System on July 31, 2013, which was also subject to a 90-day comment period.

The Lead Agencies can best utilize your comments and resource information submissions if received within the review period.

Comments may be submitted electronically via email at: PalenSolar@blm.gov. Comments may also be submitted by mail to: Palen Solar Project, c/o Aspen Environmental Group, 235 Montgomery Street, Suite 935, San Francisco, CA 94104. We strongly encourage you to submit comments in an electronic format.

Your review and comments on the content of this document are critical to the success of this planning effort. If you wish to submit comments on the Supplemental EIS/EIR, we request that you make your comments as specific as possible. Comments will be more helpful if they include suggested changes, sources, or methodologies, and reference to a section or page number. Comments containing only opinion or preferences will be considered and included as part of the decision making process, although they will not receive a formal response from the Lead Agencies.

Before including your address, phone number, email address, or other personal identifying information in your comment, be advised that your entire comment — including your personal identifying information — may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Public meetings to provide an overview of the document, respond to questions, and take public comments will be announced by local media, website, and/or public mailings at least 15 days in advance.

Copies of the Supplemental EIS/EIR have been sent to affected Federal, tribal, state, and local government agencies. Copies of the Supplemental EIS/EIR are available for public inspection on the BLM website at https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=68122. Copies are also available for public inspection at the following locations:

BLM Palm Springs–South Coast Field Office
1201 Bird Center Drive
Palm Springs, CA 92262

Riverside County Planning Department
4080 Lemon Street
Riverside, CA 92502-1409

BLM California Desert District Office
22835 Calle San Juan De Los Lagos
Moreno Valley, CA 92553

BLM California State Office
2800 Cottage Way, Suite W 1623
Sacramento, CA 95825

Thank you for your continued interest in the Supplemental EIS/EIR for the Palen Solar Project. We appreciate the information and suggestions you contribute to the planning process. For additional information or clarification regarding this document or the planning process, please contact Mark DeMaio, BLM Project Manager, at (760) 833-7124 or PalenSolar@blm.gov.

Sincerely,

Douglas J. Herrema
Field Manager
BLM Palm Springs–South Coast Field Office

Abstract

Lead Agency: U.S. Bureau of Land Management (BLM), County of Riverside (County)

Type of Action: Right-of-Way Grant and Land Use Plan Amendment

Jurisdiction: Palm Springs–South Coast Field Office

Abstract: The Supplemental Environmental Impact Statement/Environmental Impact Report/Plan Amendment (Supplemental EIS/EIR) is in response to an amendment to an application for a Right-of-Way (ROW) grant authorizing the construction, operation, maintenance, and decommissioning of a solar photovoltaic generating facility known as the Palen Solar Project (Project) and the transmission of energy generated by the Project to the grid via Southern California Edison's Red Bluff Substation. The project area is in eastern Riverside County, California and covers approximately 4,200 acres of land managed by the BLM.

Through this Supplemental EIS/EIR, the BLM describes and analyzes the Proposed Action for the construction of the 500 megawatt (MW) solar facility. New circumstances and information, including the new solar technology proposed, have prompted the BLM to prepare this document. As part of the Supplemental EIS/EIR, the BLM conducted scoping to solicit input from the public and interested agencies on the nature and extent of issues and impacts to be addressed. To assist the agency decision maker and the public in focusing on appropriate solutions to planning issues, the Supplemental EIS/EIR considers the Proposed Action, two alternatives, and the No Action/No Project Alternative.

Alternative 1, Reduced Footprint Alternative, would reduce the development footprint to 3,100 acres compared to the Proposed Action. The solar fields would be configured to fit within two separate areas of the site to avoid use of the central desert wash and retain vegetation on the site and would remain a 500 MW project. **Alternative 2**, Avoidance Alternative, would reduce the development footprint to 1,620 acres to preserve natural areas and habitat on the project site that would otherwise be developed as part of the Proposed Action. The generating capacity would be reduced to an estimated 200 – 230 MW.

When completed, the Record of Decision (ROD) for the Supplemental EIS/EIR will authorize the requested ROW grant. Comments are accepted for 45 days following the date on which the U.S. Environmental Protection Agency publishes the Notice of Availability for this Draft Supplemental EIS/EIR in the Federal Register. Comments may be submitted online using the BLM ePlanning website (below) or via e-mail to PalenSolar@blm.gov. Comments may also be submitted by mail to: Palen Solar Project, c/o Aspen Environmental Group, 235 Montgomery Street, Suite 935, San Francisco, CA 94104.

https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=68122&dctmId=0b0003e880d8b22b

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List of Acronyms

AAQS	Ambient Air Quality Standards
AC	Alternating current
ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
ACS	American Community Survey
ADT	Average daily traffic
AED	Automatic External Defibrillator
AIRFA	American Indian Religious Freedom Act
AML	Abandoned mined lands
APCD	Air Pollution Control District
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
AQCMM	Air Quality Construction Mitigation Manager
AQCMP	Air Quality Construction Mitigation Plan
AQMD	Air Quality Management District
ARMR	Archaeological Resource Management Report
ARPA	Archaeological Resources Protection Act
ATC	Authority-to-Construct
BA	Biological Assessment
BBCS	Bird and Bat Conservation Strategy
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMPs	Best Management Practices
BO	Biological Opinion
BRMIMP	Biological Resources Mitigation Implementation and Monitoring Plan
BRSA	Biological Resources Study Area
BRTR	Biological Resources Technical Report
BSE	BrightSource Energy, Inc.
CAA	Clean Air Act
CAISO	California Independent System Operator
Cal/EPA	California Environmental Protection Agency
Cal-IPC	California Invasive Plant Council
CAP	Climate Action Plan
CARB	California Air Resources Board
CAT	Climate Action Team
CCH	Consortium of California Herbaria
CCR	California Code of Regulations
CCS	Cryptocrystalline silicate
CCT	Correlated Color Temperature
CDCA	California Desert Conservation Area
CDD	California Desert District
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game

CDFW	California Department of Fish and Wildlife
CDNCL	California Desert National Conservation Lands
CDP	Census Designated Place
CDPA	California Desert Protection Act of 1994
CDV	Canine distemper virus
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Policy Act
CESA	California Endangered Species Act
CGS	California Geological Survey
CHRIS	California Historical Resources Information System
CHU	Critical habitat unit
CMA	Conservation and Management Action
CMLUCA	California Military Land Use Compatibility Analysis
CMMS	Computerized Maintenance Management Software
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Data Base
CO	Carbon monoxide
CPD	Commercial Planned Development
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRM	Cultural Resources Monitor
CRPR	California Rare Plant Rank
CRR	Cultural Resources Report
CRS	Cultural Resources Specialist
CSA	County Service Area
CSC	Chuckwalla Sand Corridor
CSS	Construction Safety Supervisor
CUPA	Certified Unified Program Agency
CURE	California Unions for Renewable Energy
CVC	California Vehicle Code
CVCM	Chocolate Mountains Ecoregion Subarea
CVGB	Chuckwalla Valley Groundwater Basin
CWA	Clean Water Act
DC	Direct current
DCR	Devers–Colorado River
DEH	Department of Environmental Health
DESCP	Drainage Erosion and Sedimentation Control Plan
DFA	Development Focus Area
DLA	Designated Leasing Area
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DPM	Diesel particulate matter
DPR	California Department of Parks and Recreation
DPV1	Devers–Palo Verde No. 1

DPV2	Devers–Palo Verde No. 2
DRECP	Desert Renewable Energy Conservation Plan
DSEIS	Draft Supplemental Environmental Impact Statement
DTCCL	Desert Training Center California-Arizona Maneuver Area Cultural Landscape
DTSC	California Department of Toxic Substances Control
DWMA	Desert Wildlife Management Area
EIS/EIR	Environmental Impact Statement/Environmental Impact Report
EMFs	Electric and magnetic fields
EO	Executive Order
EPA	Environmental Protection Agency
EPC	Engineering, Procurement, and Construction
EPS	Emissions performance standard
ERMA	Extensive Recreation Management Areas
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FDOC	Final Determination of Compliance
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act of 1976
FMMP	Farmland Mapping and Monitoring Program
FSA	Final Staff Assessment
FTA	Federal Transit Administration
FWFMP	Federal Wildland Fire Management Policy
GDE	Groundwater-dependent ecosystem
GHG	Greenhouse gas
GO	General Order
GPS	Global Positioning System
GRI	Groundwater Resources Investigation
GWP	Global warming potential
GWR	Groundwater Recharge
HCP	Habitat conservation plan
HFC	Hydrofluorocarbon
HMBP	Hazardous Materials Management Plan
HSC	Health and Safety Code
HU	Hydrologic Unit
HWCA	Hazardous Waste Control Act
IM	Instructional Memoranda
IWMP	Integrated Weed Management Plan
JTNP	Joshua Tree National Park
KOP	Key observation points
LOS	Level of service
LST	Localized Significance Threshold

LTVA	Long-Term Visitor Area
LUPA	Land Use Plan Amendment
MBTA	Migratory Bird Treaty Act of 1918
MCL	Midline carapace length
MDAB	Mojave Desert Air Basin
MFTL	Mojave fringe-toed lizard
MLD	Most Likely Descendant
MM	Mitigation measure
MOA	Memorandum of Agreement
MRZ	Mineral Resource Zone
MSA	Metropolitan Statistical Area
MSDS	Material safety data sheet
MUC	Multiple-Use Class
MUC-M	Multiple Use Class M
MW	Megawatt
MWD	Metropolitan Water District
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NCA	National Conservation Area
NCCP	Natural Community Conservation Planning Act
NECO	Northern and Eastern Colorado Desert Coordinated Management Plan
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NFWF	National Fish and Wildlife Foundation
NHPA	National Historic Preservation Act of 1966
NLCS	National Landscape Conservation System
NMFS	National Marine Fisheries Service
N2O	Nitrous oxide
NO	Nitric oxide
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
NRHP	National Register of Historic Places
NVCS	National Vegetation Classification System
NWP	Nationwide permit
OHP	Office of Historic Preservation
OHV	Off-highway vehicle
OPLMA	Omnibus Public Lands Management Act
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PAR	Property Analysis Record
PCB	Polychlorinated biphenyl

PEIS	Programmatic Environmental Impact Statement
PFCs	Perfluorocarbon
PFEIS	Programmatic Final Environmental Impact Statement
PFYC	Potential Fossil Yield Classification
PI	Principal Investigator
PLC	Programmable Logic Controller
PLP	Polarized Light Pollution
PM10	Particulate matter (less than 10 microns in diameter)
PM2.5	Fine particulate matter (less than 2.5 microns in diameter)
POD	Plan of Development
PPS	Pedestrian paleontological survey
PPV	Peak particle velocity
PRA	Paleontological Resources Assessment
PRC	Public Resources Code
PRIMP	Paleontological resource impact mitigation program
PRMMP	Paleontological Resources Monitoring and Mitigation Plan
PRPA	Paleontological Resources Preservation Act
PRR	Paleontological Resources Report
PRS	Paleontological Resources Specialist
PSD	Prevention of Significant Deterioration
PSEGS	Palen Solar Electricity Generating System
PSI	Palen Solar I, LLC
PSIII	Palen Solar III, LLC
PSMP	Process Safety Management Plan
PSP	Palen Solar Project
PSPP	Palen Solar Power Project
PTNCL	Prehistoric Trails Network Cultural Landscape
PTO	Permit-to-Operate
PV	Photovoltaic
PVID	Palo Verde Irrigation District
PVMGB	Palo Verde Mesa Groundwater Basin
PVUSD	Palo Verde Unified School District
PYFC	Potential Fossil Yield Classification
RCFD	Riverside County Fire Department
RCTC	Riverside County Transportation Commission
REAT	Renewable Energy Action Team
RECO	Renewable Energy Coordinating Office
RMP	Resource Management Planning
RMZ	Recreation Management Zone
ROD	Record of Decision
ROW	Right-of-way
ROWD	Report of Waste Discharge
RPD	Residential Planned Development
RPS	Renewable Portfolio Standard
RSA	Revised Staff Assessment

RV	Recreational vehicle
RWQCB	Regional water quality control board
SAA	Streambed Alteration Agreement
SCADA	Supervisory Control and Data Acquisition
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SEIS	Supplemental Environmental Impact Statement
SEZ	Solar Energy Zone
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SLRU	Sensitivity Level Rating Unit
SMARA	State Surface Mining and Reclamation Act
SMGB	State Mining and Geology Board
SMP	Subsidence Monitoring Plan
SPCC	Spill Prevention, Control, and Countermeasure Plan
SQRU	Scenic Quality Rating Unit
SRMA	Special Recreation Management Area
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCP	Traffic Control Plan
TCR	Tribal cultural resource
TDS	Total dissolved solids
TIS	Traffic Impact Study
TLMA	Transportation and Land Management Agency
UBC	Uniform Building Code
UFC	Uniform Fire Code
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTM	Universal Transverse Mercator
UXO	Unexploded ordnance
VHA	Volcanic hazard area
VOC	Volatile organic compound
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WA	Wilderness Area
WDR	Waste discharge requirement
WEAP	Worker Environmental Awareness Program
WHMA	Wildlife Habitat Management Area
WIU	Wilderness Inventory Unit
WMP	Weed Management Plan
WSA	Water Supply Assessment

Executive Summary

Executive Summary

ES.1 Introduction

This Supplemental Environmental Impact Statement/Environmental Impact Report (EIS/EIR) is prepared by the Bureau of Land Management (BLM) as the lead agency under the National Environmental Policy Act (NEPA) and the County of Riverside (County) as the lead agency under the California Environmental Policy Act (CEQA). This document evaluates the environmental impacts of the Palen Solar Project (the Proposed Action, PSP, or Project), proposed by EDF Renewable Energy (EDF RE).

EDF RE is seeking to revise the pending Right-of-Way (ROW) application CACA-48810 from a solar power tower project to a 500 megawatt (MW) alternating current (AC) solar photovoltaic (PV) panel facility (the Proposed Action).

EDF RE has proposed to enter into a water supply contract with the County. The contract would authorize the purchase of construction water from wells operated by the Riverside County Service Area (CSA) on private land in Lake Tamarisk, at Desert Center, approximately 10 miles west of the Project. The County's discretionary action requires CEQA compliance.

History of Palen Solar Project Applications and Review Processes

The Palen ROW application was originally submitted in 2007 by Palen Solar I, LLC (PSI), a wholly owned subsidiary of Solar Millennium, as a solar trough project[1] called the Palen Solar Power Project (PSPP). The BLM and the California Energy Commission (CEC)[2] published a Draft EIS/Staff Assessment (SA) for the Palen Solar Power Plan and Possible California Desert Conservation Area (CDCA) Plan Amendment on April 7, 2010. This Draft EIS/SA and Plan Amendment was subject to a 105-day comment period. The BLM then published a Proposed CDCA Plan Amendment and Final EIS on May 13, 2011.

In September of 2010, the California Energy Commission prepared a Revised Staff Assessment (RSA), a CEQA equivalent of an EIR, to evaluate the environmental impacts of the PSPP. On December 22, 2010, the Energy Commission issued a Commission Decision approving an alternative to the PSPP (Reconfigured Alternative #2 or #3).

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1 Solar trough technology would have used parabolic mirrors to collect heat energy from the sun to heat up an oil-based heat transfer fluid. This fluid would then release the heat to generate high pressure steam that would turn a traditional steam turbine generator to produce electricity.

2 The California Energy Commission is the lead agency for licensing thermal power plants 50 MW and larger under CEQA and has a certified regulatory program under CEQA. Under its certified program, the Energy Commission is exempt from having to prepare an EIR, but instead works through its Staff Assessment process which still results in an environmental analysis of the project, including an analysis of alternatives and mitigation measures to minimize any significant adverse effect the project may have on the environment. the

Prior to the BLM issuance of its Record of Decision (ROD), PSI informed the BLM that it would not likely construct the Project due to pending financial concerns. As a result, the BLM did not issue a ROD, did not amend the resource management plan, and did not issue a ROW for the PSPP. PSI petitioned for relief if federal bankruptcy court on April 2, 2012.

On June 21, 2012, the bankruptcy court approved the transfer of certain PSI assets to BrightSource Energy, Inc. (BSE). One such asset was PSI's holding company, Palen Solar III, LLC (PSIII), to which PSI had transferred its pending BLM ROW application. After BLM accepted the transfer to PSIII, PSIII submitted a ROW application amendment to the BLM for the Palen Solar Electricity Generating System Project (PSEGS), a 500 MW concentrating solar power tower technology facility[3] and single-circuit 230 kV gen-tie line. On July 27, 2013, the BLM issued a Draft Supplemental EIS and Plan Amendment to evaluate the potential additional environmental impacts caused by PSEGS. This Draft Supplemental EIS and Plan Amendment were made available for a 90-day comment period. The Energy Commission issued a Preliminary and Final Staff Assessments for the revised project in June and November of 2013, respectively.

The BLM did not issue a Final Supplemental EIS for the PSEGS Project because BSE, and its partner Abengoa Solar, Inc., abandoned the state authorization proceedings at the Energy Commission. On November 4, 2014, BrightSource sold its share in PSEGS to Abengoa. Abengoa sold its interest in the Project to EDF RE in December 2015 (EDF RE, 2016).

ES.2 BLM Purpose and Need

In accordance with Section 103(c) of FLPMA, public lands are to be managed for multiple use that takes into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant ROWs on public lands for systems of generation, transmission, and distribution of electric energy (Section 501(a)(4)). Taking into account the BLM's multiple use mandate, the BLM's purpose and need for the currently Proposed Action is to respond to a revised ROW application submitted by the Applicant to construct, operate, maintain, and decommission a solar PV energy-generating facility and associated infrastructure on public lands administered by the BLM in compliance with FLPMA, BLM right-of-way regulations, and other applicable Federal laws and policies.

The BLM will decide whether to deny the revised ROW application, issue the ROW grant, or issue the ROW grant with modifications. Modifications may include revising the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10(a)(1)).

The BLM's action also will include consideration of a concurrent amendment of the California Desert Conservation Area (CDCA) Plan of 1980, as amended. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission that are not identified in the CDCA Plan to be added to it through the land use plan amendment process. Therefore, if the BLM decides to approve the issuance of a ROW grant, a CDCA Plan amendment will also be approved to identify this site for solar power. To inform the Plan Amendment decisions, the BLM will rely on the

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[3] The solar thermal tower would have used arrays of heliostats to collect solar radiation and refocus the thermal energy on a centrally located power tower receiver where water would be heated into steam to turn a traditional steam turbine generator to produce electricity.

environmental and other analysis set forth in the PSPP PA/FEIS as supplemented by the Supplemental EIS/EIR.

ES.3 Riverside County and Applicant's Project Objectives

The underlying purpose of the Project is to construct and operate an economically feasible, commercially financeable 500 MW solar PV power plant.

The fundamental objectives of the Project are:

- To site the project on lands within a Solar Energy Zone (SEZ) and Development Focus Area (DFA) designated by the Western Solar Plan and Desert Renewable Energy Conservation Plan;
- To satisfy pre-existing obligations under the California Independent System Operator (CAISO) tariff and a Generator Interconnect Agreement requiring delivery of 500 MW of installed nameplate electrical capacity to the California electrical grid by way of the Red Bluff Substation in Riverside County, California; and
- To sell electricity at a competitive, low-cost price.

The secondary objectives of the project are:

- To minimize environmental impacts by:
  - Using a low-profile, non-thermal solar technology;
  - Siting the Project within a SEZ and DFA; and
  - Avoiding Desert Wildlife Management Areas, Areas of Critical Environmental Concern and National Conservation Lands where feasible;
- To increase local short-term and long-term employment opportunities;
- To provide economic benefits to Riverside County;
- To further the purpose of Secretarial Order 3285A1, establishing the development of environmentally responsible renewable energy as a priority for the Department of the Interior;
- Assist California Investor-Owned utilities in meeting their obligations under California's Renewable Portfolio Standard Program; and

Assist California in meeting greenhouse gas emissions reduction goal by 2020 and 2030 as required by the California Global Warming Solutions Act (AB 32), as amended by Senate Bill 32 in 2016.

ES.4 Rationale for Preparing a Supplemental EIS/EIR

Based on the project history summarized above, the BLM and the County have determined that a Supplemental EIS/EIR is the appropriate environmental document for NEPA and CEQA compliance.

NEPA. This EIS presents the BLM's supplemental analysis to its May 2011 Final EIS for the PSPP. This EIS also incorporates, as appropriate, the analysis from the 2013 Draft Supplemental EIS for the PSEGS. It is prepared in accordance with NEPA regulations (40 CFR §1502.9(c)) to address the new technology and project configuration being proposed by EDF RE. The project configurations considered in this Supplemental EIS are completely within the area analyzed in the

2011 Final EIS and 2013 Draft Supplemental EIS. Under NEPA, agencies are required to prepare supplements to either draft or final environmental impact statements if:

> *(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or*
>
> *(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its effects.*

A supplemental EIS must provide a basis for rational decision-making and give the public and other agencies an opportunity to review and comment on the analysis of the changes or new information (BLM NEPA Handbook H-1790-1 (2008) at §5.3).

CEQA. Because of the change in technology (the PV technology has no thermal component), the Energy Commission no longer has jurisdiction over the Palen Solar Project.[4] However, a CEQA review is still required, and Riverside County is the new lead CEQA agency.

This EIR is a Supplemental EIR prepared pursuant to Section 15163 of the CEQA Guidelines in that it evaluates environmental impacts associated with the Project, which has already been the subject of extensive environmental review. Under CEQA, a supplemental EIR shall be required by the lead agency if:

> *(a) Substantial changes are proposed in the project which will require major revisions of the environmental impact report;*
>
> *(b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report, or*
>
> *(c) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available (PRC §21166).*

Supplementing a previously certified EIR or Final EIS allows meeting the requirements of NEPA and CEQA as efficiently as possible, avoiding redundancy in the process.

ES.5 Public Involvement

The BLM and the CEC solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the NEPA and CEQA documents for the different iterations of the original PSPP. Formal public scoping begins following publication of a Notice of Intent (NOI) to prepare an environmental impact statement for a proposed action. The NOI to prepare an EIS for the PSPP was published in the Federal Register on November 23, 2009 (74 Fed. Reg. 61169). Publication of the NOI began a 30-day public comment period. The CEC held an Informational Hearing and Site Visit for the PSPP on January 25, 2010.

The Draft EIS for the PSPP project/ Plan Amendment was made available for a 105-day comment period, announced through the Federal Register on April 7, 2010.

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[4] The California Energy Commission is the lead agency for licensing thermal power plants 50 megawatts and larger only. It does not license solar PV technology.

For PSEGS, the BLM solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the PSEGS Draft SEIS as well as the extent to which those issues and impacts would be analyzed in the document at a multi-agency meeting held March 26, 2013.

A notice was published by the CEC for an environmental scoping meeting in Indio, California, and public site visit for the PSEGS on February 20, 2013. No formal comment or scoping period was established for the PSEGS.

The Supplemental Draft EIS for the PSEGS project/Plan Amendment was also made available for a 90-day comment period, announced through the Federal Register on July 31, 2013.

No new NOI or NOP was published for the PSP because the environmental document being prepared is a Supplemental EIS/EIR. To provide the public with an opportunity to comment on the revised PV project application, the BLM opened a public comment period for the Palen Solar Project from June 29, 2016, to September 3, 2016. This provided the public and regulatory agencies an opportunity to comment on the scope of the Supplemental EIS/EIR and to identify issues that should be addressed in this environmental document.

Public notices were mailed, notifying interested parties of two planned public meetings concerning the Project held on June 29, 2016, and August 4, 2016 at the Palm Springs City Hall Council Chamber. Twenty-six attendees were documented at the first meeting and twelve attendees were documented at the second meeting. A total of 14 written comment letters were submitted and 8 individuals presented oral comments during the public meetings.

Areas of Controversy/Public Concerns

Areas of controversy/comment topics included: purpose and need, cultural resource impacts, impacts on wildlife and habitats, impacts on recreational areas and recreationists, air quality, and impacts on hydrological resources.

Comments were received from members of the public; federal, regional, and local agencies and organizations; and tribal representatives.

ES.6 Palen Solar Project and Alternatives

Proposed Action

The Proposed Action is the construction and operation of a 500 MW nominal capacity, AC solar PV energy-generating project that would be expected to produce approximately 1,598,700 megawatt-hours per year[5] (MWh/y). Solar PV technology involves the direct conversion of photons (i.e., sunlight) into electricity. Once completed, the facility would deliver power to the Southern California Edison (SCE) Red Bluff Substation, located about 4 miles west of the project site.

The Project would be located in Riverside County, 10 miles east of Desert Center on federal public lands administered by the BLM, Palm Springs–South Coast Field Office. The Project would be

[5] The number of megawatt-hours per year is a measure of the system's energy, which is the amount of power generated by the system during a year.

developed within the area identified and analyzed in the PSPP PA/FEIS as Reconfigured Alternative 2 Option 2. The project site is within the Riverside East Solar Energy Zone (SEZ) of the BLM's Western Solar Plan and within a Development Focus Area of the BLM's Desert Renewable Energy Conservation Plan. The Project would be located within the 4,221-acre ROW boundary. Of the total acres, 3,381 acres would be permanently occupied by major project components and another 97 acres would be temporarily disturbed.

The proposed solar facility would consist of several main components:

- A single large solar field with two smaller adjacent solar fields for a total of 3 fields;
- Two-hundred power blocks of electrical generating capacity of 2.5 MW each;
- An electrical substation;
- An operations and maintenance building;
- Up to 10 on-site groundwater wells;
- One temporary 28-acre construction laydown area;
- A roadway system consisting of internal and perimeter roads;
- A main access road from the Interstate 10 (I-10)/Corn Springs interchange;
- A 6.9-mile double-circuit 230 kV gen-tie extending from the project substation to the existing SCE Red Bluff Substation; and
- An access road parallel to the gen-tie line.

EDF RE has included in the Proposed Action a set of 52 Applicant Proposed Measures (APMs), which the Applicant commits to implementing. The APMs were derived from the Conservation Management Actions included in the CDCA Plan, as amended by the Desert Renewable Energy Conservation Plan (DRECP).

Alternative 1: Reduced Footprint Alternative

EDF RE designed the Reduced Footprint Alternative in response to a BLM request to develop an alternative layout that would avoid effects on the microphyll woodland and primary desert wash that crosses the Palen Solar Project site. The Reduced Footprint Alternative would be constructed within the same project boundaries as the Proposed Action but the solar field would be more compressed, eliminating use of the central desert wash that crosses the project site from southwest to northeast.

The Reduced Footprint Alternative would remain a 500 MW project, but its permanent disturbance would cover 3,100 acres (compared with 3,381 acres of disturbance for the Proposed Action). The alternative would divide the Project's solar arrays into two separate fields. The western field would be extended north, compared with the Proposed Action. The eastern field would be reconfigured to eliminate its original northeastern third, and would be shifted southward.

The other changes to the Proposed Action would be:

- Creation of a gap between the east and west solar array areas, of ranging from 1,750 feet to 2,300 feet. This gap area would be undisturbed by most construction activity although one or more roads connecting the two solar array areas would be required as well as entrances to each site.
- Each solar field would be fenced separately.

Alternative 2: Avoidance Alternative

The Avoidance Alternative was developed by BLM in order to allow consideration of the ROW boundaries that might result from implementing the requirements of the CDCA Plan as amended by the Desert Renewable Energy Conservation Plan (DRECP) Conservation and Management Actions (CMAs). The Avoidance Alternative would be constructed within the same boundary as the Proposed Action, but development would be limited to a much smaller area, based on the resource avoidance requirements defined in CMAs. The resulting developable area within the ROW boundary would be 1,620 acres (compared with 4,221 acres in the Proposed Action). The generating capacity would be approximately 200 to 230 MW, compared with 500 MW in the Proposed Action and Alternative 1.

As described in Section 1.5.3, pursuant to Section II.3.2.4 of the DRECP Land Use Plan Amendment (LUPA), the DRECP does not apply to "[a] project that is proposed in a BLM SEZ and that is considered a 'pending project' under the Western Solar Plan Record of Decision (the project application was filed before June 30, 2009)." The initial Palen project application was filed before June 30, 2009 and the Project is located within a SEZ. In addition, the amendments contemplated by the PSP as proposed either do not affect the project boundaries (e.g., change in project developer), or are related to avoiding resource or land use conflicts or adapting the Project to third-party-owned infrastructure constraints. Therefore, the PSP is being processed under the CDCA land use plan decisions in place prior to the adoption of the DRECP LUPA.

The majority of the CMAs defined in the CDCA Plan, as amended by the DRECP LUPA, have been met for the Proposed Action through compliance with mitigation measures and the Applicant Proposed Measures incorporated by EDF into the Proposed Action. The CMAs that apply to the project site and have not already been incorporated are presented below; these CMAs define the Avoidance Alternative. The following three CMAs are the primary ones that would restrict the project development area.

- LUPA-BIO-RIPWET-1: Avoid riparian and wetland vegetation types with specific setbacks.
- LUPA-BIO-DUNE-2: Avoid or minimize impacts to sand transport corridors and associated species.
- LUPA-BIO-DUNE-4: Map and avoid dune formations and sand accumulations with suitable habitat characteristics for the Mojave fringe-toed lizard.

The remaining DRECP CMAs restrict development or require other protection for biological resources:

- LUPA-BIO-SVF-3: Avoid creosote bush rings larger than 5 meters in diameter.
- LUPA-BIO-VEG-1: Adhere to current BLM policy for cactus, yucca, and succulents management.
- LUPA-BIO-VEG-6: BLM may consider disposal of succulents through public sale.
- LUPA-BIO-COMP-1: Compensate for loss of habitat using specified compensation ratios.
- LUPA-BIO-COMP-2: Compensation for mortality impacts to specific bird and bat species will be determined based on monitoring of bird and bat mortality and a fee re-assessed every 5 years.

- LUPA-SW-17: Groundwater extraction shall not contribute to exceeding perennial yield of the basin.
- LUPA-SW-23: Develop a Water Supply Assessment with detailed and specific requirements.
- LUPA-SW-26: Impose groundwater pumping mitigation if monitoring data indicate impacts on water-dependent resources that exceed those mitigated for in the NEPA analysis and ROD.
- DFA-VRM-2: Require regional mitigation for visual impacts in DFAs.
- LUPA-CTTM-2: Avoid activities that would impact use within 0.5 miles from centerline of tier 2 Roads/Primitive Roads, and 300 feet from centerline of tier 3 primitive roads/trails.

No Action Alternative / No Project Alternative

As also defined in the PSPP PA/FEIS, under the No Action Alternative and the CEQA No Project Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be issued. The County would not act on the groundwater permit applications.

The DRECP was approved in a Record of Decision in September 2016. Because this Proposed Action is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this application would not foreclose the site to development in the future. Definition and analysis of the type of project that may ultimately be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides a discussion of the impacts of various types of solar technologies that may occur in DFAs. Any future project at this location would be subject to a separate NEPA process and the requirements included in the DRECP LUPA.

ES.7 Environmental Impacts

Detailed descriptions of impacts of the action alternatives are provided in Chapter 4 (Environmental Consequences), along with a discussion of the cumulative impacts.

Proposed Action. The Proposed Action would require the largest number of acres of the PV technology alternatives and would result in the following effects.

- **Air Resources.** The emission estimates indicate that construction activities under the Proposed Action could cause adverse effects by contributing to exceedances of the ozone and PM10 standards.
- **Cultural Resources.** All of the resources within the project site would be destroyed during project grading and construction, but construction would be subject to numerous mitigation measures that would protect or avoid certain resources. The Proposed Action would result in indirect impact on historic-era architectural resources and places of traditional cultural importance primarily due to associated visual impacts.
- **Paleontological Resources.** There is the potential that Project construction could damage or destroy paleontological resources; in particular, those limited excavation activities that would affect areas deeper than 3 feet below ground surface. The probability of encountering paleontological resources on the ground surface, where the majority of the grading and ground disturbance would occur, is considered low.

- **Soil Resources.** There is the potential for erosion by wind or water although EDF RE proposed to reduce grading and complete vegetation removal to the extent feasible. The Proposed Action has the potential to result in direct effects of up to 870 acres and indirect effects of up to 421 acres to the sand dune corridor.
- **Vegetation Resources.** The Proposed Action would result in direct impacts including destruction of special-status plants and loss or degradation of native vegetation and habitat. Indirect effects would also occur such as erosion, sedimentation, and introduction of invasive species. The primary vegetation types impacted by the solar facility would be Sonoran creosote bush scrub (2,433 acres) followed by unvegetated ephemeral dry wash (585 acres), desert dry wash woodland (190 acres) and stabilized and partially stabilized dunes (147 acres).
- **Visual Resources.** The Proposed Action would result in substantial visual contrast when viewed from some representative viewpoints, such as Corn Springs Road at the edge of the Chuckwalla Mountains Wilderness, I-10 eastbound near the corners of the Project, and the portions of the Palen-McCoy and Chuckwalla Mountains Wilderness nearest to the Project. Impacts to the overall visitor experience in the Joshua Tree National Park would not be substantial. Nighttime lighting and daytime glare would result in limited effects with mitigation.
- **Water Resources.** The Proposed Action would have an impact on the Chuckwalla Valley Groundwater Basin balance but would not exceed net average recharge to the basin. It could contribute to a substantial long-term cumulative impact to the basin in conjunction with other foreseeable projects in the basin.
- **Wildlife Resources.** The Proposed Action would result in direct effects including mortality, injury, or displacement of special-status animals; loss of native habitat; and interference with wildlife movement or migration. Indirect effects would also occur. Key special status species include the desert tortoise and the Mojave fringe-toed lizard, and special status birds. The Proposed Action could impede wildlife movement for wide-ranging wildlife such as burro deer, kit fox, coyotes, and badgers, and on a population level could impede gene flow for desert tortoises. Impacts to habitat for special-status species would also occur as a result of loss of sand dune habitat, reduced sand transport, and effects on waters of the State.

The Proposed Action would also affect environmental justice, lands and realty, mineral resources, multiple use classes, noise, public health and safety, recreation, social and economic impacts, special designations, transportation and public access, and wildland fire ecology. Mitigation would be required to reduce the effects.

The electricity produced under the Proposed Action would measurably contribute towards reducing California's GHG emissions.

Multiple renewable and other infrastructure projects have been proposed along the I-10 corridor whose effects could combine with those of the Proposed Action. Cumulative effects would also be substantial to cultural resources, soil resources (sand transport corridor), vegetation resources, visual resources, water resources, and wildlife resources.

Alternative 1: Reduced Footprint Alternative. The Reduced Footprint Alternative would require 3,100 acres of land and would avoid the central and largest desert wash. Because it would remain a 500 MW project, the majority of the effects of the alternative would be substantially similar to those described above for the Proposed Action. It would result in substantial reduction

of impacts to native trees (primarily palo verde and ironwood trees), which are mainly located within desert dry wash woodland vegetation. This alternative would allow the Project to avoid much of the riparian and wetland vegetation in the main wash. These reduced impacts to important habitat areas would lead to reduced direct impacts to birds and mammals using the dry wash woodland habitat. However, it would increase impacts to the sand transport corridor (extending into the southeast corner of the proposed ROW area), Mojave fringe-toed lizard habitat, which is found in the windblown sand. For water resources, surface water erosion impacts, flooding impacts, and possibly surface water hydrology and quality impacts would be reduced by about one fourth in magnitude due to the avoidance of the central wash and smaller area of disturbance.

Alternative 2: Avoidance Alternative. The Avoidance Alternative would allow development on 1,620 acres and would have the smallest footprint of the alternatives considered. It would allow for development of up to 250 MW and as such it would have reduced impacts in all resources due to the smaller size. It would eliminate impacts to the sand transport corridor and substantially reduce impacts to Mojave fringe-toed lizard and associated habitat. Additionally, it would result in substantial reduction of impacts to native trees (primarily palo verde and ironwood trees), which are mainly located within desert dry wash woodland vegetation. Greenhouse gas emissions avoided by producing electricity would occur at roughly half of the rates otherwise presented for the Proposed Action.

ES.8 BLM's Agency Preferred Alternative

BLM has defined the Reduced Footprint Alternative as the Agency Preferred Alternative. This identification is based on BLM planning regulations (BLM Manual 1790-1, Ch. V(B)(4)(c)). The BLM will re-evaluate the preferred alternative following analysis of public comments on the Draft Supplemental EIS/EIR.

ES.9 CEQA Environmentally Superior Alternative

CEQA Guidelines require that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Action. If the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior alternative among the other alternatives [CEQA Guidelines Section 15126.6(e)(2)]. CEQA provides the County, as the lead agency, with the opportunity to select a project alternative rather than the proposed Project, particularly if the alternative will have significantly less physical environmental impacts than the Project. However, the lead agency under CEQA is not required to do so, especially when an alternative does not fulfill all of the stated Project objectives.

In the case of the Palen Solar Project, the No Project Alternative would have the least impacts overall. While another project may ultimately be developed on the Palen site, it is not now foreseeable, so the analysis assumes that the construction and operational impacts of the Proposed Action would not occur under the No Project Alternative. Given this determination, CEQA requires that the EIR identify the alternative with the next least severe impacts. This would be Avoidance Alternative (Alternative 2), due to its substantially smaller size, which results in reduced ground disturbance and visual effects. However, it must be noted that the ground disturbance reduction of this smaller alternative would be offset by the additional electricity that

would likely be generated using fossil fuels, reducing the potential to benefit the global greenhouse gas emissions situation.

ES.10 Next Steps

A minimum of 45 days will be provided for commenting on the Draft Supplemental EIS/EIR. Because this Draft Supplemental EIS/EIR does not make changes to the plan amendment, or raise any significant new information concerning the plan amendment, and supplements the previous analysis by adding a new ROW alternative, the comment periods on the Draft EIS for the PSPP Project/Plan Amendment and the SDEIS for the PSEGS fulfilled the BLM's requirement to provide a 90-day comment period on the plan amendment. Therefore, this document is subject to the CEQ's requirement that Draft EISs and Draft Supplemental EISs be made available for 45 days.

BLM and Riverside County will review and provide responses to all substantive comments in the Final EIS/EIR. Information about all opportunities for public involvement will be presented on the BLM website at https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=renderDefaultPlanOrProjectSite&projectId=68122.

ES.11 Impact Summary Tables for CEQA Impact Significance

For CEQA analysis, levels of significance in this EIR are defined by classification as follows:

- Significant and unavoidable impacts
- Significant impacts that can be mitigated to a less than significant level
- Adverse but less than significant impacts
- Beneficial impacts.

The tables on the following pages summarize all identified impacts of the Proposed Action using the CEQA conclusions, arranged as follows:

- Table ES-1: Summary of Significant Unmitigable Impacts of the Proposed Action
- Table ES-2: Summary of Significant but Mitigable Impacts and Mitigation for the Proposed Action
- Table ES-3: Less Than Significant Impacts of the Proposed Action
- Table ES-4: Cumulative Impacts and Mitigation Measures for the Proposed Action

Table ES-1. Summary of Significant Unmitigable Impacts of the Proposed Action

CEQA Criterion	Mitigation Measure (if any)
Air Quality	
AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation. [Applies only to construction-phase impacts.]	**MM AQ-SC-1:** Air Quality Construction Mitigation Manager (AQCMM) **MM AQ-SC-2:** Air Quality Construction Mitigation Plan (AQCMP) **MM AQ-SC-3:** Construction Fugitive Dust Control **MM AQ-SC-4:** Dust Plume Response Requirement **MM AQ-SC-5:** Diesel-Fueled Engine Control **MM AQ-SC-6:** Emission Standards Vehicles **MM AQ-SC-7:** Operation Dust Control Plan **MM AQ-SC-8:** BLM AO Copies of Documents

Table ES-1. Summary of Significant Unmitigable Impacts of the Proposed Action

CEQA Criterion	Mitigation Measure (if any)
Cultural Resources	
CR-1: Cause Adverse Change in Significance of Historical Resource	**MM CUL-1:** Cultural Resources Personnel **MM CUL-2:** Project Documentation for Cultural Resources Personnel **MM CUL-3:** Monitoring and Discovery Plan **MM CUL-4:** Cultural Resources Report (CRR) **MM CUL-5:** Environmental Awareness Program (WEAP) **MM CUL-6:** Construction Monitoring Program **MM CUL-7:** Authority to Halt Construction and Treatment of Discoveries **MM CUL-8:** Flag and Avoid **MM CUL-9:** Data Recovery for Simple Prehistoric Sites **MM CUL-10:** Data Recovery for Complex Prehistoric Sites **MM CUL-11:** Data Recovery for Historic-Period Refuse Scatters **MM CUL-12:** Data Recovery for Historic-Period Sites with Features **MM CUL-13:** Memorandum of Agreement **MM CUL-14:** Update Palen Dry Lake ACEC Management Plan **MM CUL-17:** Coordination with Interested Tribes **MM CUL-18:** Avoidance, Preservation and Relocation **MM CUL-19:** Archaeological and Native American Tribal Monitoring **MM CUL-20:** Monitoring Program for Decommissioning **MM CUL-21:** Native American Tribal Monitoring during Decommissioning
CR-2: Cause a substantial adverse change in the significance of a (unique) archaeological resource pursuant to §15064.5.	**MM CUL-1:** Cultural Resources Personnel **MM CUL-2:** Project Documentation for Cultural Resources Personnel **MM CUL-3:** Monitoring and Discovery Plan **MM CUL-4:** Cultural Resources Report (CRR) **MM CUL-5:** Environmental Awareness Program (WEAP) **MM CUL-6:** Construction Monitoring Program **MM CUL-7:** Authority to Halt Construction and Treatment of Discoveries **MM CUL-8:** Flag and Avoid **MM CUL-9:** Data Recovery for Simple Prehistoric Sites **MM CUL-10:** Data Recovery for Complex Prehistoric Sites **MM CUL-11:** Data Recovery for Historic-Period Refuse Scatters **MM CUL-12:** Data Recovery for Historic-Period Sites with Features **MM CUL-13:** Memorandum of Agreement **MM CUL-14:** Update Palen Dry Lake ACEC Management Plan **MM CUL-15:** Palen Pass Historic District Recording **MM CUL-16:** Coordination with Interested Tribes **MM CUL-17:** Avoidance, Preservation and Relocation **MM CUL-18:** Archaeological and Native American Tribal Monitoring **MM CUL-19:** Monitoring Program for Decommissioning **MM CUL-20:** Native American Tribal Monitoring during Decommissioning

Table ES-1. Summary of Significant Unmitigable Impacts of the Proposed Action

CEQA Criterion	Mitigation Measure (if any)
CR-3: Disturb any human remains, including those interred outside of dedicated cemeteries.	**MM CUL-1:** Cultural Resources Personnel **MM CUL-2:** Project Documentation for Cultural Resources Personnel **MM CUL-3:** Monitoring and Discovery Plan **MM CUL-4:** Cultural Resources Report (CRR) **MM CUL-5:** Environmental Awareness Program (WEAP) **MM CUL-6:** Construction Monitoring Program **MM CUL-7:** Authority to Halt Construction and Treatment of Discoveries **MM CUL-8:** Flag and Avoid **MM CUL-9:** Data Recovery for Simple Prehistoric Sites **MM CUL-10:** Data Recovery for Complex Prehistoric Sites **MM CUL-11:** Data Recovery for Historic-Period Refuse Scatters **MM CUL-12:** Data Recovery for Historic-Period Sites with Features **MM CUL-13:** Memorandum of Agreement **MM CUL-14:** Update Palen Dry Lake ACEC Management Plan **MM CUL-15:** Palen Pass Historic District Recording **MM CUL-16:** Coordination with Interested Tribes **MM CUL-17:** Avoidance, Preservation and Relocation **MM CUL-18:** Archaeological and Native American Tribal Monitoring **MM CUL-19:** Monitoring Program for Decommissioning **MM CUL-20:** Native American Tribal Monitoring during Decommissioning
TCR-1: Cause a substantial adverse change in the significance of a tribal cultural resource identified through consultation with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project (Public Resources Code Section 21084.2).	**MM CUL-1:** Cultural Resources Personnel **MM CUL-2:** Project Documentation for Cultural Resources Personnel **MM CUL-3:** Monitoring and Discovery Plan **MM CUL-4:** Cultural Resources Report (CRR) **MM CUL-5:** Environmental Awareness Program (WEAP) **MM CUL-6:** Construction Monitoring Program **MM CUL-7:** Authority to Halt Construction and Treatment of Discoveries **MM CUL-8:** Flag and Avoid **MM CUL-9:** Data Recovery for Simple Prehistoric Sites **MM CUL-10:** Data Recovery for Complex Prehistoric Sites **MM CUL-11:** Data Recovery for Historic-Period Refuse Scatters **MM CUL-12:** Data Recovery for Historic-Period Sites with Features **MM CUL-13:** Memorandum of Agreement **MM CUL-14:** Update Palen Dry Lake ACEC Management Plan **MM CUL-15:** Palen Pass Historic District Recording **MM CUL-16:** Coordination with Interested Tribes **MM CUL-17:** Avoidance, Preservation and Relocation **MM CUL-18:** Archaeological and Native American Tribal Monitoring **MM CUL-19:** Monitoring Program for Decommissioning **MM CUL-20:** Native American Tribal Monitoring during Decommissioning

Table ES-1. Summary of Significant Unmitigable Impacts of the Proposed Action

CEQA Criterion	Mitigation Measure (if any)
TCR-2: Cause a substantial adverse change in the significance of a tribal cultural resource listed in, or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources, and it is demolished or materially altered as described in State CEQA Guidelines section 15064.5 (b).	**MM CUL-1:** Cultural Resources Personnel **MM CUL-2:** Project Documentation for Cultural Resources Personnel **MM CUL-3:** Monitoring and Discovery Plan **MM CUL-4:** Cultural Resources Report (CRR) **MM CUL-5:** Environmental Awareness Program (WEAP) **MM CUL-6:** Construction Monitoring Program **MM CUL-7:** Authority to Halt Construction and Treatment of Discoveries **MM CUL-8:** Flag and Avoid **MM CUL-9:** Data Recovery for Simple Prehistoric Sites **MM CUL-10:** Data Recovery for Complex Prehistoric Sites **MM CUL-11:** Data Recovery for Historic-Period Refuse Scatters **MM CUL-12:** Data Recovery for Historic-Period Sites with Features **MM CUL-13:** Memorandum of Agreement **MM CUL-14:** Update Palen Dry Lake ACEC Management Plan **MM CUL-15:** Palen Pass Historic District Recording **MM CUL-16:** Coordination with Interested Tribes **MM CUL-17:** Avoidance, Preservation and Relocation **MM CUL-18:** Archaeological and Native American Tribal Monitoring **MM CUL-19:** Monitoring Program for Decommissioning **MM CUL-20:** Native American Tribal Monitoring during Decommissioning
Vegetation Resources	
VEG-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified by local, state, or federal agencies. [Applies only to sand habitats and sand transport corridor. All other impacts on vegetation communities have greater certainty in effective mitigation.]	**MM VEG-1:** Designated (Authorized) Biologist Selection and Qualifications **MM VEG-2:** Designated Biologist Duties **MM VEG-3:** Biological Monitor Selection and Qualifications **MM VEG-4:** Biological Monitor Duties **MM VEG-5:** Designated Biologist and Biological Monitor Authority **MM VEG-6:** Worker Environmental Awareness Program (WEAP) **MM VEG-7:** Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) **MM VEG-8:** Impact Avoidance and Minimization Measures **MM VEG-9:** Weed Management Plan **MM VEG-11:** Mitigation for Impacts to State Waters **MM VEG-13:** Revegetation of Temporarily Disturbed Areas **MM WIL-4:** Desert Tortoise Compensatory Mitigation **MM WIL-10:** Sand Dune/Mojave Fringe-toed Lizard Mitigation
Visual Resources	
VIS-1: Have a substantial adverse effect on a scenic vista.	**MM VIS-1:** Surface Treatment of Project Structures and Buildings **MM VIS-2:** Revegetation of Disturbed Soil Areas **MM VIS-3:** Temporary and Permanent Exterior Lighting **MM VIS-4:** Project Design
VIS-3: Substantially degrade the existing visual character or quality of the site and its surroundings. [Applies only to landscape viewed from KOPs 7, 8, 10, and 11.]	**MM VIS-1:** Surface Treatment of Project Structures and Buildings **MM VIS-2:** Revegetation of Disturbed Soil Areas **MM VIS-3:** Temporary and Permanent Exterior Lighting **MM VIS-4:** Project Design

Table ES-1. Summary of Significant Unmitigable Impacts of the Proposed Action

CEQA Criterion	Mitigation Measure (if any)
Wildlife Resources	
WIL-1: Have a substantial adverse direct or indirect effect on any candidate, sensitive, or special-status species identified by local, state, or federal agencies. [Applies only to Mojave Fringe-Toed Lizards and special-status special status bird or listed species.]	**MM WIL-7:** Bird and Bat Conservation Strategy (BBCS) **MM WIL-10:** Sand Dune/Mojave Fringe-toed Lizard Mitigation

Table ES-2. Summary of Significant but Mitigable Impacts and Mitigation for the Proposed Action

CEQA Criterion	Mitigation Measure(s)
Air Quality	
AQ-4: Expose sensitive receptors to substantial pollutant concentrations.	**MM AQ-SC-1:** Air Quality Construction Mitigation Manager (AQCMM) **MM AQ-SC-2:** Air Quality Construction Mitigation Plan (AQCMP) **MM AQ-SC-3:** Construction Fugitive Dust Control **MM AQ-SC-4:** Dust Plume Response Requirement **MM AQ-SC-5:** Diesel-Fueled Engine Control **MM AQ-SC-6:** Emission Standards Vehicles **MM AQ-SC-7:** Operation Dust Control Plan **MM AQ-SC-8:** BLM AO Copies of Documents
Noise	
NOI-1: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. [Applies only to construction-phase impacts.]	**MM NOISE-3:** Employee Noise Control Program **MM NOISE-4:** Noise Restrictions **MM NOISE-5:** Occupational Noise Survey **MM NOISE 6:** Construction Restrictions
NOI-3: A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the Project.	**MM NOISE-4:** Noise Restrictions
NOI-4: A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the Project.	**MM NOISE-1:** Public Notification Process **MM NOISE-2:** Noise Complaint Process **MM NOISE-4:** Noise Restrictions **MM NOISE-6:** Construction Restrictions
Paleontological Resources	
P-1: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	**MM PAL-1:** Paleontological Resources Specialist (PRS) **MM PAL-2:** Materials for PRS and BLM Project Manager **MM PAL-3:** Paleontological Resources Monitoring and Mitigation Plan (PRMMP) **MM PAL-4:** Approved Weekly Training Pertaining to Ground Disturbance **MM PAL-5:** Pedestrian Paleontological Survey **MM PAL-6:** Paleontological Monitoring Activities **MM PAL-7:** Implementation of PRMMP **MM PAL-8:** Paleontological Resources Report (PRR)
Public Health and Safety	
HAZ-1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	**MM HAZ-1:** Hazardous Material Requirements **MM HAZ-2:** Hazardous Materials Management Plan (HMBP) **MM HAZ-3:** Safety Management Plan **MM WASTE-2:** Resume of Professional Engineer or Geologist **MM WASTE-3:** Inspection and Reporting of Potentially Contaminated Soil **MM WASTE-7:** Operation Waste Management Plan
HAZ-2: Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	**MM HAZ-1:** Hazardous Material Requirements **MM HAZ-2:** Hazardous Materials Management Plan (HMBP) **MM HAZ-3:** Safety Management Plan **MM WASTE-2:** Resume of Professional Engineer or Geologist **MM WASTE-3:** Inspection and Reporting of Potentially Contaminated Soil **MM WASTE-7:** Operation Waste Management Plan

Table ES-2. Summary of Significant but Mitigable Impacts and Mitigation for the Proposed Action

CEQA Criterion	Mitigation Measure(s)
HAZ-4: Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.	**MM GEO-1:** Soils Engineering Report **MM WASTE-2:** Resume of Professional Engineer or Geologist **MM WASTE-3:** Inspection and Reporting of Potentially Contaminated Soil **MM WASTE-7:** Operation Waste Management Plan
GS-1: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving rupture of a known earthquake fault.	**MM GEO-1:** Soils Engineering Report
GS-2: Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving strong seismic shaking.	**MM GEO-1:** Soils Engineering Report
Recreation	
REC-1: Increase the use of existing neighborhood and regional parks or other recreation facilities such that substantial physical deterioration of the facilities would occur or be accelerated.	**MM RC-1:** Prevent Blockage of Open Route DC952 **MM RC-2:** Provide Interpretive and Informational Signs
Soil Resources	
S-1: Result in substantial soil erosion or the loss of topsoil.	**MM AQ SC-3:** Construction Fugitive Dust Control **MM Soil&Water-1:** Drainage Erosion and Sediment Control Plan
Transportation and Public Access	
TRA-1: Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to inter-sections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	**MM TRA-1:** Construction Traffic Control Plan
TRA-3: Result in a change in air traffic patterns, including either an increase in traffic levels or change in location that results in substantial safety risks.	**MM TRA-3:** FAA and Military Notification
TRA-4: Substantially increase roadway hazards due to a design feature or incompatible uses.	**MM TRA-1:** Construction Traffic Control Plan **MM TRA-2:** Panel Glare Reduction
TRA-5: Result in inadequate emergency access.	**MM TRA-1:** Construction Traffic Control Plan

Table ES-2. Summary of Significant but Mitigable Impacts and Mitigation for the Proposed Action

CEQA Criterion	Mitigation Measure(s)
Vegetation Resources	
VEG-1: Have a substantial adverse direct or indirect effect on any candidate, sensitive, or special-status species identified by local, state, or federal agencies.	**MM VEG-1:** Designated (Authorized) Biologist Selection and Qualifications **MM VEG-2:** Designated Biologist Duties **MM VEG-3:** Biological Monitor Selection and Qualifications **MM VEG-4:** Biological Monitor Duties **MM VEG-5:** Designated Biologist and Biological Monitor Authority **MM VEG-6:** Worker Environmental Awareness Program (WEAP) **MM VEG-7:** Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) **MM VEG-8:** Impact Avoidance and Minimization Measures **MM VEG-9:** Weed Management Plan **MM VEG-10:** Special Status Plant Impact Avoidance and Minimization **MM VEG-11:** Mitigation for Impacts to State Waters **MM VEG-13:** Revegetation of Temporarily Disturbed Areas **MM WIL-10:** Sand Dune Community/Mojave Fringe-toed Lizard Mitigation
VEG-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified by local, state, or federal agencies. [Applies only to unvegetated ephemeral dry wash, desert wash woodland, and groundwater-dependent vegetation.]	**MM VEG-1:** Designated (Authorized) Biologist Selection and Qualifications **MM VEG-2:** Designated Biologist Duties **MM VEG-3:** Biological Monitor Selection and Qualifications **MM VEG-4:** Biological Monitor Duties **MM VEG-5:** Designated Biologist and Biological Monitor Authority **MM VEG-6:** Worker Environmental Awareness Program (WEAP) **MM VEG-7:** Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) **MM VEG-8:** Impact Avoidance and Minimization Measures **MM VEG-9:** Weed Management Plan **MM VEG-11:** Mitigation for Impacts to State Waters **MM VEG-13:** Revegetation of Temporarily Disturbed Areas **MM VEG-14:** Groundwater-dependent Vegetation Monitoring **MM VEG-15:** Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources **MM WIL-4:** Desert Tortoise Compensatory Mitigation
Visual Resources	
VIS-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	**MM VIS-3:** Temporary and Permanent Exterior Lighting **MM BLM-VIS 2:** Night Lighting
Water Resources	
WR-1: Violate any water quality standards or waste discharge requirements.	**MM WR-1:** Drainage Erosion and Sedimentation Control Plan (DESCP) **MM WR-4:** Project Drainage Report and Plans **MM WR-5:** Drainage Maintenance Program **MM WR-10:** Groundwater Quality Monitoring and Reporting Plan

Table ES-2. Summary of Significant but Mitigable Impacts and Mitigation for the Proposed Action

CEQA Criterion	Mitigation Measure(s)
WR-2: Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).	**MM WR-2:** Construction and Operation Water Use **MM WR-3:** Groundwater Level Monitoring, Mitigation, and Reporting **MM WR-7:** Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin **MM WR-8:** Ground Subsidence Monitoring and Action Plan **MM WR-9:** Estimation of Impacts to PVMGB
WR-3: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.	**MM WR-1:** Drainage Erosion and Sedimentation Control Plan (DESCP) **MM WR-4:** Project Drainage Report and Plans
WR-4: Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	**MM WR-4:** Project Drainage Report and Plans
WR-5: Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	**MM WR-4:** Project Drainage Report and Plans
WR-6: Otherwise substantially degrade water quality.	**MM WR-1:** Drainage Erosion and Sedimentation Control Plan (DESCP) **MM WR-4:** Project Drainage Report and Plans **MM WR-10:** Groundwater Quality Monitoring and Reporting Plan
WR-8: Place within a 100-year flood hazard area structures which would impede or redirect flood flows.	**MM WR-4:** Project Drainage Report and Plans
Wildland Fire	
WF-1: Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	**MM WORKER SAFETY-7:** Fire Protection/Response Infrastructure

Table ES-2. Summary of Significant but Mitigable Impacts and Mitigation for the Proposed Action

CEQA Criterion	Mitigation Measure(s)
Wildlife Resources	
WIL-1: Have a substantial adverse direct or indirect effect on any candidate, sensitive, or special-status species identified by local, state, or federal agencies. [Applies to special status wildlife and habitat except Mojave Fringe-Toed Lizard and special status bird or listed species.]	**MM WIL-1:** Desert Tortoise Protection **MM WIL-2:** Desert Tortoise Relocation/Translocation Plan **MM WIL-3:** Desert Tortoise Compliance Verification **MM WIL-4:** Desert Tortoise Compensatory Mitigation **MM WIL-5:** Raven Management Plan and Fee **MM WIL-6:** Pre-construction Nest Surveys and Avoidance Measures **MM WIL-7:** Bird and Bat Conservation Strategy (BBCS) **MM WIL-8:** American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures **MM WIL-9:** Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures **MM WIL-10:** Sand Dune/Mojave Fringe-toed Lizard Mitigation **MM WIL-11:** Golden Eagle Inventory and Monitoring **MM WIL-12:** Water Tank Covers
WIL-2: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	**MM WIL-1:** Desert Tortoise Protection **MM VEG-8:** Impact Avoidance and Minimization Measures
WIL-4: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state conservation plan. Applies to desert wash habitat.]	**MM WIL-1:** Desert Tortoise Protection **MM WIL-2:** Desert Tortoise Relocation/Translocation Plan **MM WIL-3:** Desert Tortoise Compliance Verification **MM WIL-4:** Desert Tortoise Compensatory Mitigation **MM WIL-5:** Raven Management Plan and Fee **MM WIL-6:** Pre-construction Nest Surveys and Avoidance Measures **MM WIL-7:** Bird and Bat Conservation Strategy (BBCS) **MM WIL-8:** American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures **MM WIL-9:** Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures **MM WIL-10:** Sand Dune/Mojave Fringe-toed Lizard Mitigation **MM WIL-11:** Golden Eagle Inventory and Monitoring **MM WIL-12:** Water Tank Covers

Table ES-3. Less Than Significant Impacts of the Proposed Action

Air Quality
AQ-1: Conflict with or obstruct implementation of the applicable air quality plan.
AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation. [Applies only to operational-phase impacts.]
AQ-3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
AQ-5: Create objectionable odors affecting a substantial number of people.
Global Climate Change
GHG-1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
GHG-2: Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.
Mineral Resources
MR-1: Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
Noise
NOI-1: Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. [Applies only to operational-phase impacts.]
NOI-2: Exposure of persons to or generation of excessive groundborne vibration or ground-borne noise levels.
Public Health and Safety
HAZ-7: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
GS-5: Be located on a geologic unit or soil that is unstable, or would become unstable as a result of the Project and potentially result in on-site or off-site landside, lateral spreading, subsidence, liquefaction or collapse.
Recreation
REC-1: Increase the use of existing neighborhood and regional parks or other recreation facilities such that substantial physical deterioration of the facilities would occur or be accelerated.
Social and Economic Impacts
Public Services, PS-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, or schools.
Utilities/Service Systems, USS-4: Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs.
Utilities/Service Systems, USS-5: Comply with federal, state, and local statutes and regulations related to solid waste.
Soil Resources
S-2: Be located on expansive soil, as defined in Table 18 1 B of the Uniform Building Code (1994), creating substantial risks to life or property.
Transportation and Public Access
TRA-2: Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
Visual Resources
VIS-3: Substantially degrade the existing visual character or quality of the site and its surroundings. [Applies only to landscape viewed from KOP 9 and other at-grade views.]

Table ES-4. Cumulative Impacts and Mitigation Measures for the Proposed Action

CEQA Criterion and Impact Class	Mitigation Measure(s)
Air Quality	
AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation. *Less than Significant with Mitigation* for construction-phase impacts.	**MM AQ-SC-1:** Air Quality Construction Mitigation Manager (AQCMM) **MM AQ-SC-2:** Air Quality Construction Mitigation Plan (AQCMP) **MM AQ-SC-3:** Construction Fugitive Dust Control **MM AQ-SC-4:** Dust Plume Response Requirement **MM AQ-SC-5:** Diesel-Fueled Engine Control **MM AQ-SC-6:** Emission Standards Vehicles **MM AQ-SC-7:** Operation Dust Control Plan **MM AQ-SC-8:** BLM AO Copies of Documents
Paleontological Resources	
P-1: Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. *Less than Significant with Mitigation*	**MM PAL-1:** Paleontological Resources Specialist (PRS) **MM PAL-2:** Materials for PRS and BLM Project Manager **MM PAL-3:** Paleontological Resources Monitoring and Mitigation Plan (PRMMP) **MM PAL-4:** Approved Weekly Training Pertaining to Ground Disturbance **MM PAL-5:** Pedestrian Paleontological Survey **MM PAL-6:** Paleontological Monitoring Activities **MM PAL-7:** Implementation of PRMMP
Social and Economic Impacts	
Public Services, PS-1: Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, or schools. *Less than Significant with Mitigation*	**MM WORKER SAFETY-7:** Fire Protection/Response Infrastructure
Transportation and Public Access	
T-1: Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. *Less than Significant with Mitigation*	**MM TRA-1:** Construction Traffic Control Plan
T-4: Substantially increase roadway hazards due to a design feature or incompatible uses. *Less than Significant with Mitigation*	**MM TRA-2:** Panel Glare Reduction

Table ES-4. Cumulative Impacts and Mitigation Measures for the Proposed Action

CEQA Criterion and Impact Class	Mitigation Measure(s)
Vegetation Resources	
VEG-1: Have a substantial adverse direct or indirect effect on any candidate, sensitive, or special-status species identified by local, state, or federal agencies. *Less than Significant with Mitigation*	**MM VEG-1:** Designated (Authorized) Biologist Selection and Qualifications **MM VEG-2:** Designated Biologist Duties **MM VEG-3:** Biological Monitor Selection and Qualifications **MM VEG-4:** Biological Monitor Duties **MM VEG-5:** Designated Biologist and Biological Monitor Authority **MM VEG-6:** Worker Environmental Awareness Program (WEAP) **MM VEG-7:** Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) **MM VEG-8:** Impact Avoidance and Minimization Measures **MM VEG-9:** Weed Management Plan **MM VEG-10:** Special Status Plant Impact Avoidance and Minimization **MM VEG-11:** Mitigation for Impacts to State Waters **MM WIL-10:** Sand Dune Community/Mojave Fringe-toed Lizard Mitigation
VEG-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified by local, state, or federal agencies. *Significant and Unavoidable* for aeolian sand habitat and sand transport. *Less than Significant with Mitigation* for unvegetated ephemeral dry wash, desert wash woodland, and groundwater-dependent vegetation.	**MM VEG-1:** Designated (Authorized) Biologist Selection and Qualifications **MM VEG-2:** Designated Biologist Duties **MM VEG-3:** Biological Monitor Selection and Qualifications **MM VEG-4:** Biological Monitor Duties **MM VEG-5:** Designated Biologist and Biological Monitor Authority **MM VEG-6:** Worker Environmental Awareness Program (WEAP) **MM VEG-7:** Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) **MM VEG-8:** Impact Avoidance and Minimization Measures **MM VEG-9:** Weed Management Plan **MM VEG-11:** Mitigation for Impacts to State Waters **MM VEG-13:** Revegetation of Temporarily Disturbed Areas **MM VEG-14:** Groundwater-dependent Vegetation Monitoring **MM VEG-15:** Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources **MM WIL-4:** Desert Tortoise Compensatory Mitigation **MM WIL-10:** Sand Dune Community/Mojave Fringe-toed Lizard Mitigation
Visual Resources	
VIS-3: Substantially degrade the existing visual character or quality of the site and its surroundings. *Significant and Unavoidable* for construction- and operation-phase impacts.	**MM VIS-1:** Surface Treatment of Project Structures and Buildings **MM VIS-2:** Revegetation of Disturbed Soil Areas **MM VIS-3:** Temporary and Permanent Exterior Lighting **MM VIS-4:** Project Design **MM BLM-VIS-2:** Night Lighting **MM AQ-SC-3:** Construction Fugitive Dust Control **MM AQ-SC-4:** Dust Plume Response Requirement **MM BIO-8:** Impact Avoidance and Minimization Measures
VIS-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. *Significant and Unavoidable*	**MM VIS-3:** Temporary and Permanent Exterior Lighting **MM BLM-VIS-2:** Night Lighting

Table ES-4. Cumulative Impacts and Mitigation Measures for the Proposed Action

CEQA Criterion and Impact Class	Mitigation Measure(s)
Wildlife Resources	
WIL-1: Have a substantial adverse direct or indirect effect on any candidate, sensitive, or special-status species identified by local, state, or federal agencies. *Significant and Unavoidable* for Mojave Fringe-Toed Lizard and special-status and migratory birds. *Less than Significant with Mitigation* for other impacts.	**MM VEG-1:** Designated (Authorized) Biologist Selection and Qualifications **MM VEG-2:** Designated Biologist Duties **MM VEG-3:** Biological Monitor Selection and Qualifications **MM VEG-4:** Biological Monitor Duties **MM VEG-5:** Designated Biologist and Biological Monitor Authority **MM VEG-6:** Worker Environmental Awareness Program (WEAP) **MM VEG-7:** Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) **MM VEG-8:** Impact Avoidance and Minimization Measures **MM VEG-9:** Weed Management Plan **MM VEG-11:** Mitigation for Impacts to State Waters **MM WIL-1:** Desert Tortoise Protection **MM WIL-2:** Desert Tortoise Relocation/Translocation Plan **MM WIL-3:** Desert Tortoise Compliance Verification **MM WIL-4:** Desert Tortoise Compensatory Mitigation **MM WIL-5:** Raven Management Plan and Fee **MM WIL-6:** Pre-construction Nest Surveys and Avoidance Measures **MM WIL-7:** Bird and Bat Conservation Strategy (BBCS) **MM WIL-9:** Burrowing Owl Impact Avoidance, Minimization and Compensation Measures **MM WIL-10:** Sand Dune/Mojave Fringe-toed Lizard Mitigation **MM WIL-11:** Golden Eagle Inventory and Monitoring
WIL-2: Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. *Less than Significant with Mitigation*	**MM WIL-1:** Desert Tortoise Protection **MM VEG-8:** Impact Avoidance and Minimization Measures
WIL-4: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state conservation plan. *Less than Significant with Mitigation*	**MM WIL-1:** Desert Tortoise Protection **MM WIL-2:** Desert Tortoise Relocation/Translocation Plan **MM WIL-3:** Desert Tortoise Compliance Verification **MM WIL-4:** Desert Tortoise Compensatory Mitigation **MM WIL-5:** Raven Management Plan and Fee **MM WIL-6:** Pre-construction Nest Surveys and Avoidance Measures **MM WIL-7:** Bird and Bat Conservation Strategy (BBCS) **MM WIL-8:** American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures **MM WIL-9:** Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures **MM WIL-10:** Sand Dune/Mojave Fringe-toed Lizard Mitigation **MM WIL-11:** Golden Eagle Inventory and Monitoring **MM WIL-12:** Water Tank Covers

Chapter 1

Introduction

CHAPTER 1
Introduction

1.1 Introduction and History of Project

This Supplemental Environmental Impact Statement/Environmental Impact Report (EIS/EIR) is prepared by the Bureau of Land Management (BLM) as the lead agency under the National Environmental Policy Act (NEPA) and the County of Riverside (County) as the lead agency under the California Environmental Policy Act (CEQA). This document evaluates the environmental impacts of the Palen Solar Project (the Proposed Action, PSP, or Project), proposed by EDF Renewable Energy (EDF RE).

EDF RE has revised[1] the Right-of-Way (ROW) application CACA-48810 to the BLM from a solar power tower project to a 500 megawatt (MW) alternating current (AC) solar photovoltaic (PV) panel facility (the Palen Solar Project). The BLM must evaluate this application under NEPA before it can act on this application.

EDF RE has proposed to enter into a water supply contract with the County. The contract would authorize the purchase of construction water from wells on private land in the Lake Tamarisk area about 10 miles west of the PSP. These wells are operated by the Riverside County Service Area (CSA). The County's discretionary action requires CEQA compliance.

The solar PV panels will convert photons from sunlight into electricity. The Project would be located on approximately 4,200 acres of public land administered by BLM in Riverside County, California, approximately 10 miles east of Desert Center and north of Interstate 10. See Figure 1-1, Regional Context, for an overview of the region, and Figure 1-2, Project Location, for the project site (all figures are presented in Appendix A). Once completed, the facility would deliver power to the Southern California Edison (SCE) Red Bluff Substation, located about 4 miles west of the project site.

A solar project at the Palen site was initially proposed in 2007, and a series of environmental documents have been prepared since that time. The history of these documents and the associated agency actions is presented in the following paragraphs.

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[1] The term "amend,' and variations thereto, is used in a few contexts within BLM regulations and planning documents related to modifications to a right-of-way request/grant. To avoid some confusion with such things as an "amendment application" (a request to modify a current grant), the term "revised application" is used throughout this document to indicate that EDF RE has submitted a request to modify its pending right-of-way application.

History of Palen Solar Project Applications and Review Processes

The Palen ROW application was originally submitted in 2007 by Palen Solar I, LLC (PSI) a wholly owned subsidiary of Solar Millennium, as a solar trough project[2] called the Palen Solar Power Project (PSPP). The BLM and the California Energy Commission (CEC)[3] published a Draft EIS/Staff Assessment (SA) for the PSPP and Possible California Desert Conservation Area (CDCA) Plan Amendment. This Draft EIS/SA and Plan Amendment was subject to a 105-day comment period. The BLM then published a Proposed CDCA Plan Amendment and Final EIS on May 13, 2011.

In September of 2010, the California Energy Commission prepared a Revised Staff Assessment (RSA), a CEQA equivalent of an EIR to evaluate the environmental impacts of the PSPP. On December 22, 2010, the Energy Commission issued a Commission Decision approving an alternative to the PSPP (Reconfigured Alternative #2 or #3).

Prior to the BLM issuance of its Record of Decision (ROD), PSI informed the BLM that it would not likely construct the Project due to financial concerns. As a result, the BLM did not issue a ROD, did not amend the resource management plan, and did not issue a ROW grant for the PSPP.

On June 21, 2012, after filing for bankruptcy, a bankruptcy court approved the transfer of certain PSI assets to BrightSource Energy, Inc. (BSE). One such asset was PSI's holding company — Palen Solar III, LLC (PSIII), to which PSI had transferred its pending BLM ROW application. After BLM accepted the transfer to PSIII, PSIII submitted a revised ROW application to the BLM for the Palen Solar Electricity Generating System Project (PSEGS), a 500 MW concentrating solar power tower technology facility[4] and double-circuit 230 kV gen-tie line. On July 27, 2013, the BLM issued a Draft Supplemental EIS and Plan Amendment to evaluate the potential additional environmental impacts caused by PSEGS. This Draft Supplemental EIS and Plan Amendment were made available for a 90-day comment period. The Energy Commission issued a Preliminary and Final Staff Assessments for the amended project in June and November of 2013, respectively.

The BLM did not issue a Final Supplemental EIS for the PSEGS Project because BSE, and its partner Abengoa Solar, Inc., abandoned the state authorization proceedings at the Energy Commission. On November 4, 2014, BrightSource sold its share in PSEGS to Abengoa. Abengoa sold its interest in the Project to EDF RE in December 2015 (EDF RE, 2016).

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2 Solar trough technology would have used parabolic mirrors to collect heat energy from the sun to heat up an oil-based heat transfer fluid that would then release the heat to generate high pressure steam that would turn a traditional steam turbine generator to produce electricity.

3 The California Energy Commission is the lead agency for licensing thermal power plants 50 MW and larger under CEQA and has a certified regulatory program under CEQA. Under its certified program, the Energy Commission is exempt from having to prepare an EIR, but instead works through its Staff Assessment process which still results in an environmental analysis of the project, including an analysis of alternatives and mitigation measures to minimize any significant adverse effect the project may have on the environment

4 The solar thermal tower would have used arrays of heliostats to collect solar radiation and refocus the thermal energy on a centrally located power tower receiver where water would be heated into steam to turn a traditional steam turbine generator to produce electricity.

Rationale for Preparing a Supplemental EIS/EIR

Based on the project history summarized above, the BLM and the County have determined that a Supplemental EIS/EIR is the appropriate environmental document for NEPA and CEQA compliance.

The rationale of each agency's decision is presented in the following paragraphs.

NEPA. This EIS presents the BLM's supplemental analysis to its May 2011 Final EIS for the PSPP. This EIS also incorporates, as appropriate, the analysis from the 2013 Draft Supplemental EIS for the PSEGS. This Supplemental EIS/EIR is prepared in accordance with NEPA regulations (40 CFR §1502.9(c)) to address the new technology and project configuration being proposed by EDF RE, as well as to consider any new information that has arisen since 2011. The project configurations considered in this Supplemental EIS are completely within the area analyzed in the 2011 Final EIS and 2013 Draft Supplemental EIS. The scope and nature of the potential plan amendment has not changed. Under NEPA, agencies are required to prepare supplements to either draft or final environmental impact statements if:

> *(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or*
>
> *(ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its effects.*

A supplemental EIS must provide a basis for rational decision-making and give the public and other agencies an opportunity to review and comment on the analysis of the changes or new information (BLM NEPA Handbook H-1790-1 (2008) at §5.3).

CEQA. Because of the change in technology (the PV technology has no thermal component), the Energy Commission no longer has jurisdiction over the Palen Solar Project.[5] However, a CEQA review is still required, and Riverside County is the new lead CEQA agency (see Section 1.4.2).

This EIR is a Supplemental EIR prepared pursuant to Section 15163 of the CEQA Guidelines in that it evaluates environmental impacts associated with the Palen solar project, which has already been the subject of extensive environmental review. Under CEQA, a supplemental EIR shall be required by the lead agency if:

> *(a) Substantial changes are proposed in the project which will require major revisions of the environmental impact report;*
>
> *(b) Substantial changes occur with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report, or*
>
> *(c) New information, which was not known and could not have been known at the time the environmental impact report was certified as complete, becomes available (PRC §21166).*

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5 The California Energy Commission is the lead agency for licensing thermal power plants 50 megawatts and larger only. It does not license solar PV technology.

Supplementing a previously certified EIR or Final EIS allows meeting the requirements of NEPA and CEQA as efficiently as possible, avoiding redundancy in the process. A Supplemental EIS/EIR may incorporate previously published information by referencing (and not repeating) the relevant portions of previous documents. However, in this case in addition to noting where certain information is incorporated by reference from the previous CEQA and NEPA documents, this Supplemental EIS/EIR summarizes the information from the PSPP Final EIS and Staff Assessments. This approach is intended to facilitate understanding of the Project and its impacts, and to eliminate the need for frequent reader referral to the previous documents pertaining to previously proposed projects at the Palen site.

1.2 BLM's Purpose and Need for Project

NEPA guidance published by the Council on Environmental Quality (CEQ) states that an environmental impact statement's Purpose and Need section "shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action" (40 CFR 1502.13). The following discussion sets forth the purpose of and need for the action as required under NEPA.

In accordance with Section 103(c) of FLPMA, public lands are to be managed for multiple use that takes into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant rights-of-way on public lands for systems of generation, transmission, and distribution of electric energy (Section 501(a)(4)). Taking into account the BLM's multiple use mandate, the BLM's purpose and need for the Proposed Action is to respond to a FLPMA right-of-way application, as revised, submitted by the Applicant to construct, operate, maintain, and decommission a solar photovoltaic energy-generating facility and associated infrastructure on public lands administered by the BLM in compliance with FLPMA, BLM right-of-way regulations, and other applicable Federal laws and policies.

This Proposed Action would, if approved, assist the BLM in addressing the management objectives in:

- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner.
- Secretarial Order 3285A1, Renewable Energy Development by the DOI, dated February 22, 2010. This Secretarial Order establishes the development of renewable energy as a priority for the DOI and creates a Departmental Task Force on Energy and Climate Change. It also announced a policy goal of identifying and prioritizing specific locations (study areas) best suited for large-scale production of solar energy.
- Memorandum of Understanding between the Department of the Interior and the State of California on Renewable Energy (January 13, 2012) instructs Interior agencies and State agencies to take the necessary actions to further implementation of California's AB32 and SBX2 and the Secretary's Order 3285A1.
- Competitive Processes, Terms, and Conditions for Leasing Public Lands for Solar and Wind Energy Development and Technical Changes and Correction (43 CFR Parts 2800 and 2880,

December 19, 2016): The development of renewable energy resources on the public lands remains a national priority.

The BLM will decide whether to deny the revised right-of-way application, grant the right-of way, or grant the right-of-way with modifications. Modifications may include revising the proposed use or changing the route or location of the proposed facilities (43 CFR 2805.10(a)(1)).

The BLM's action also will include consideration of a concurrent amendment of the California Desert Conservation Area (CDCA) Plan of 1980, as amended. The CDCA Plan, while recognizing the potential compatibility of solar generation facilities on public lands, requires that all sites associated with power generation or transmission that are not identified in the CDCA Plan be added to it through the land use plan amendment process. The project site is within the CDCA, but is not identified in the CDCA Plan for solar power generation. Therefore, if the BLM decides to approve the issuance of a ROW grant, a CDCA Plan amendment will also be approved to identify this site for solar power (See Sections 1.5.2 and 1.5.3 regarding the relationship of the Proposed Action to the Western Solar Plan and DRECP).[6]

1.3 Riverside County and Applicant's Project Objectives

The underlying purpose of the Project is to construct and operate an economically feasible, commercially financeable 500 MW solar PV power plant.

The fundamental objectives of the Project are:

- To site the project on lands within a Solar Energy Zone (SEZ) and Development Focus Area (DFA) designated by the Western Solar Plan and Desert Renewable Energy Conservation Plan;
- To satisfy pre-existing obligations under the CAISO tariff and a Generator Interconnect Agreement requiring delivery of 500 MW of installed nameplate electrical capacity to the California electrical grid by way of the Red Bluff Substation in Riverside County, California; and
- To sell electricity at a competitive, low-cost price.

The secondary objectives of the project are:

- To minimize environmental impacts by:
  - Using a low-profile, non-thermal solar technology;
  - Siting the Project within a SEZ and DFA; and
  - Avoiding Desert Wildlife Management Areas, Areas of Critical Environmental Concern and National Conservation Lands where feasible;
- To increase local short-term and long-term employment opportunities;
- To provide economic benefits to Riverside County;

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6 The potential CDCA plan amendment to identify this project site for solar power has been analyzed in the PSPP Draft EIS (2010), Final EIS (2011), and in the PSEGS Draft Supplemental EIS (2013). As such, this Draft Supplemental EIS is not focused on reassessing the potential plan amendment. Instead, the focus is on the environmental impacts related to the different solar technology under the most recent project proposal. Discussion of the potential plan amendment is included in this Supplemental Draft EIS to provide a full description and context of the proposed BLM action.

- To further the purpose of Secretarial Order 3285A1, establishing the development of environmentally responsible renewable energy as a priority for the Department of the Interior;
- To assist California Investor-Owned utilities in meeting their obligations under California's Renewable Portfolio Standard Program; and
- To assist California in meeting greenhouse gas emissions reduction goal by 2020 and 2030 as required by the California Global Warming Solutions Act (AB 32), as amended by Senate Bill 32 in 2016.

1.4 Major Authorizing Laws and Regulations

The primary agency-specific authorizing laws and regulations are summarized in the following sections.

1.4.1 BLM

BLM's authority and policy guidance for making a decision related to the Proposed Action flows from Section 1701, et seq., of FLPMA. FLPMA establishes public land policy and guidelines for administration, and provides for the management, protection, development, and enhancement of public lands. Section 501(a)(4) of FLPMA specifically authorizes BLM to issue ROW grants for the generation, transmission, and distribution of electric energy.

Between 2005 and 2011, the BLM developed and issued Instructional Memoranda (IM) to establish and refine a Solar Energy Development Policy in 2004 (IM 2005-006), 2007 (IM 2007-097), and 2010 (IM 2010-141 and IM 2011-003). These successive IM addressed the increased interest in solar energy development on BLM-administered lands and provided direction for renewable energy development on public lands. These IM, along with additional IM developed from 2011 through 2014, and the 2016 Competitive Leasing Rule[7], describe the BLM's Solar Energy Program and established procedures for considering and processing solar energy applications.

1.4.2 Riverside County

The Applicant has requested that the County of Riverside enter into a water supply contract between the Applicant and the County. The contract would authorize the purchase of construction water from two wells operated by the Riverside County Service Area (CSA) 51 in Lake Tamarisk, at Desert Center, approximately 10 miles west of the project site. The County has discretionary authority to approve a water supply contract; therefore, this act requires CEQA review of the solar facility (Public Resources Code. Section 21065(b), CEQA Guidelines Section 15378(a)(2)). Pursuant to CEQA Guidelines Section 15162, the County of Riverside intends to rely on this Supplemental EIS/EIR to provide the environmental review required by CEQA for the County's decision regarding the approval of a water supply contract.

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[7] Competitive Processes, Terms, and Conditions for Leasing Public Lands for Solar and Wind Energy Development and Technical Changes and Corrections (43 CFR Parts 2800 and 2880); Federal Register, Vol. 81, No. 243, December 19, 2016.

As described in Section 1.1, the California Energy Commission (CEC) certified the PSPP Final Staff Assessment as being adequate under CEQA, and it certified the PSPP Application after defining overriding considerations that outweighed significant and unavoidable cumulative impacts to cultural and visual resources. The CEC's regulatory process, including the evidentiary record and associated analyses, is functionally equivalent to the preparation of an EIR (Public Resources Code Section 21080.5).

Any public agency other than the CEC that must make a decision subject to CEQA on the same site or related facility must use the documents prepared by the CEC in the same manner as they would use an EIR prepared by a lead agency (Public Resources Code Section 25519(c)). In this instance, Riverside County is relying on the environmental analysis document prepared by the CEC for the PSPP proposal.

1.4.3 U.S. Fish and Wildlife Service

The United States Fish and Wildlife Service (USFWS) has jurisdiction over threatened and endangered species listed under the federal Endangered Species Act (ESA) (16 U.S.C. Section 1531 et seq.). Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally listed species.

In June of 2011, following review of the required Biological Assessment (BA), the USFWS issued a Biological Opinion (BO) authorizing take of federally listed species for the PSPP. For the Proposed Action, the USFWS will determine if the BA and/or the BO need to be updated. If an updated BA/BO are required, the USFWS is expected to issue a revised BO that specifies reasonable and prudent measures that must be implemented for any protected species that may be affected adversely by the Proposed Action.

Either the 2011 BO or the revised BO are needed by BLM prior to its issuance of the ROD. Compliance with the measures identified by the USFWS in the BO would be required under the ESA and also defined in the ROD.

1.4.4 Tribal Consultation

The BLM consults with Native American tribes in accordance with several authorities, including NEPA, the National Historic Preservation Act of 1966 (NHPA) (16 USC 470), as amended; the American Indian Religious Freedom Act of 1978 (42 USC 1996), as amended; Executive Order (EO) 13007 (May 24, 1996), concerning Indian Sacred Sites; EO 13175 (Nov. 6, 2000), concerning Consultation and Coordination With Indian Tribal Governments; and the Presidential Memorandum of April 29, 1994 (59 FR 22951 (1994). For this project, BLM expanded its consultation to include Native American groups not recognized by the federal government.

As part of the PSPP and PSEGS project, the BLM consulted with the tribes in 2010 and 2011 and again in 2013 and 2014. For the Palen Solar Project, the BLM re-initiated consultation with tribes in 2016. The consultation is detailed in Chapter 5, Consultation and Coordination.

1.4.5 U.S. Army Corps of Engineers

The United States Army Corps of Engineers (USACE) has jurisdiction to protect the aquatic ecosystems, including water quality and wetland resources, under Section 404 of the Clean Water Act (33 USC. 1344). Under this authority, USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, by reviewing proposed projects to determine whether they may impact such resources and, thereby, be required to obtain a Section 404 permit. During the 2009-2010 NEPA process, the BLM provided information to the USACE to assist the agency in making a determination regarding its jurisdiction and the need for a Section 404 permit. The USACE rendered a final opinion on August 2, 2010 concluding that the PSPP Proposed Action did not affect waters of the U.S. and thus, did not require a Section 404 permit (USACE, 2010). According to the USACE, this was because the aquatic resources identified are intrastate isolated waters with no apparent interstate or foreign commerce connection. No changes to the aquatic ecosystems at the site have occurred since the determination that would change this conclusion.

1.4.6 California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW) protects fish and aquatic habitats within the State through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. While the Palen Project would be located entirely on federal lands, the Project has the potential to affect State-listed species, streambeds, and waters of the State, so CDFW retains permitting authority over these lands if such effects are determined to occur.

In the context of CDFW regulation, the term "streambed" encompasses all portions of the bed, banks, and channel of any stream, including intermittent and ephemeral streams, extending laterally to the upland edge of riparian vegetation. In the case of vegetated ephemeral dry washes, such as those present on the project site, this CDFW interpretation often results in an asserted geographic jurisdictional area that is much wider than the active channel of the stream and, therefore, much wider than the jurisdiction of the USACE. Fish and Game Code Section 1602(a) states that it is unlawful for an entity to "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake" without first notifying CDFW of that activity. If CDFW determines that the activity may substantially adversely affect an existing fish or wildlife resource, the entity will need to obtain a Lake or Streambed Alteration Agreement (SAA) from the CDFW before it may commence the activity. CDFW would include in the SAA measures necessary to protect the affected resources (Id.).

CDFW also regulates potential impacts to species that are protected under the California Endangered Species Act (CESA) (Fish and Game Code Section 2050, et seq.). The Applicant must file an application for an Incidental Take Permit with the CDFW for state-listed species it may impact. More information regarding the coordination with CDFW is presented in Section 5, Consultation and Coordination.

1.5 Relationship to BLM Policies, Plans, and Programs

This section describes the relationship of the Palen Solar Project to the BLM's Solar Energy Development Policy, the Federal Wildland Fire Policy, and Programmatic Final Environmental Impact Statement for Vegetation Treatments Using Herbicide. Land Use Plan conformance, including the Project's relationship to the CDCA Plan, Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan), the Western Solar Plan, and DRECP are also discussed below.

1.5.1 Relationship to BLM Policies

BLM's Solar Energy Development Policy. The BLM processes solar energy right-of-way applications for lands in accordance with its Solar Energy Development Policy (Instruction Memorandum No. 2011-003) (BLM, 2010). Pursuant to this policy, applications for commercial solar energy facilities are processed as right-of-way authorizations under Title V of FLPMA and its implementing regulations (43 CFR Part 2800). Applications also must comply with the BLM's environmental and planning requirements. Among other things, BLM's Solar Energy Development Policy provides policy guidance on early coordination with Federal land managers and stakeholders, the term of solar energy right-of-way authorizations, diligent development requirements, bond coverage, Best Management Practices (BMPs), and BLM access to records. Further, the BLM's Solar Energy Development Policy states

> *Secretarial Order 3285A1, signed on March 11, 2009, and amended on February 22, 2010, established the development of renewable energy as a priority of the Department of the Interior... The BLM has identified some 23 million acres of the public lands with utility-scale solar energy potential and over 200 right-of-way applications have been submitted to the BLM for processing. As the cost of producing solar energy declines in future years and as additional transmission capacity is developed, there will be an even greater interest in locating utility-scale solar energy projects on the public lands. This policy IM helps ensure environmentally-responsible development of solar projects on public lands and provides for effective processing of the right-of-way applications.*

The BLM is considering the Proposed Action within the framework of this policy. See Section 1.5.4 regarding the BLM December 19, 2016 Rule Competitive Processes, Terms, and Conditions for Leasing Public Lands for Solar and Wind Energy Development and Technical Changes and Corrections.

1.5.2 Relationship to the Western Solar Plan

In order to address interest in solar energy development and to implement a national energy policy recommendation to increase renewable energy production, in 2012 BLM and the U.S. Department of Energy (DOE) undertook efforts to comprehensively evaluate solar energy potential on public lands. In July 2012, BLM and DOE published the Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (Western Solar Plan). The Western Solar Plan analyzed two alternative plans for managing solar energy development on BLM-administered public lands in the six-state study area. One of these plans, called the Western

Solar Plan, was adopted through the Approved Resource Management Plan Amendments/ROD for Solar Energy Development in Six Southwestern States in October 2012.

The Western Solar Plan made amendments to 89 BLM land use plans, including the CDCA Plan, not only to support solar energy development on public lands, but also to minimize potential environmental, cultural, and socioeconomic impacts. As part of the Western Solar Plan, the BLM identified priority development areas called Solar Energy Zones (SEZs) that are well suited for utility-scale production of solar energy, "variance" areas outside of SEZs where solar development would be open to applications, and "exclusion" areas where utility-scale solar energy development would not be permitted. The Project is located within the Riverside East SEZ.

The Western Solar Plan states that "pending" applications filed within SEZs prior to June 30, 2009 are not subject to Western Solar Plan. Amendments to such pending applications are also not subject to the Plan's new requirements,

> *provided that such amendments either (1) do not change the boundaries of the pending ROW applications; or (2) are related to avoiding resource or land use conflicts, adapting the project to third-party-owned infrastructure constraints, or using or designating trans-location or mitigation lands* (Section B.12, Western Solar Plan ROD).

Instead, "pending" applications and qualifying amendments must be processed consistently with the land use plan decisions that existed prior to the adoption of the Western Solar Plan ROD.

The Palen Solar Project's initial application for a right-of-way grant (ROW) was submitted to BLM prior to June 30, 2009, on March 14, 2007. Therefore, the Project qualifies as a "pending" application which is exempt from the Western Solar Plan ROD, and is instead subject to the land use plan decisions that preceded the Western Solar Plan.

The currently proposed PSP is a revision to this pending application, but it still meets the criteria for continued exclusion from application of the Western Solar Plan. Amendments which do not relate to boundary changes are not relevant to the exclusion inquiry. For instance, the change in the project developer and the change in solar technology under the PSP do not affect whether the Project is exempt from the Western Solar Plan ROD.

The Palen PV amendment proposals that do impact project boundaries occur in two categories: (1) reductions made to the project footprint to avoid impacts to sand dune habitat and sand transport corridors; and (2) a shift in the alignment of a portion of the gen-tie line to accommodate the final location of SCE Red Bluff Substation and align the transmission line corridor for the Project within NextEra's Desert Sunlight Solar Farm Project transmission line ROW. The first category of changes is therefore "related to avoiding resource or land use conflicts," and the second category of changes is "related to ... adapting the project to third-party-owned infrastructure constraints." Accordingly, the Palen Solar Project qualifies as an amendment to a pending application which is not subject to the Western Solar Plan ROD.

1.5.3 Relationship to the California Desert Renewable Energy Conservation Plan (DRECP)

In November 2008, pursuant to an executive order by the Governor of California, federal and California state agencies formed the Renewable Energy Action Team (REAT) to, among other things, develop the DRECP, which amends the CDCA Plan. As ultimately approved, the purpose of the DRECP is to conserve and manage plant and wildlife communities on BLM-administered federal lands in the desert regions of California while streamlining the approval of compatible renewable energy projects. BLM published its ROD and Land Use Plan Amendment (LUPA) to the California Desert Conservation Plan, Bishop Resource Management Plan, and Bakersfield Resource Management Plan in September 2016.

Of the approximately 10 million acres of BLM-managed public lands in the Mojave and Colorado desert regions of California, the CDCA Plan, as amended by the DRECP LUPA, allocates approximately 388,000 acres as Development Focus Areas (DFAs) for solar, wind, and geothermal projects, similar to the SEZs under the Western Solar Plan. It also allocates variance lands where renewable energy may be developed depending on further review. The CDCA Plan, as amended by the DRECP LUPA, also allocates lands for conservation and recreation, and determined that those allocations are not compatible with renewable energy development. Finally, renewable energy may be considered on general public lands, which are lands not allocated for specific values or uses. The Project is located within a DFA.

As described in Section 1.5.2, pursuant to Section II.3.2.4 of the DRECP LUPA, the DRECP does not apply to "[a] project that is proposed in a BLM SEZ and that is considered a 'pending project' under the Western Solar Plan ROD (the project application was filed before June 30, 2009)." As discussed above, the initial project application was filed before June 30, 2009, the Project is located within a SEZ, and the amendments contemplated by the Palen PV proposal either do not affect the project boundaries (e.g., change in project developer) or are related to avoiding resource or land use conflicts or adapting the Project to third-party-owned infrastructure constraints. Therefore, the Palen PV proposal is being processed under the CDCA land use plan decisions in place prior to the adoption of the DRECP LUPA and Western Solar Plan.

1.5.4 BLM Competitive Leasing Process for Solar and Wind Energy Development

On December 19, 2016, BLM released the final Competitive Leasing Rule (Competitive Processes, Terms, and Conditions for Leasing Public Lands for Solar and Wind Energy Development and Technical Changes and Corrections; BLM, 2016) to facilitate responsible solar and wind energy development and to receive fair market value for such development. The Competitive Leasing Rule promotes the use of preferred Designated Leasing Areas (DLAs) for solar and wind energy development (including the SEZs under the Western Solar Plan) and establish competitive processes, terms, and conditions (including rental and bonding requirements) for solar and wind energy development rights-of-way both inside and outside DLAs.

Pursuant to Section 2809.19(a)(1) of the Competitive Leasing Rule (Applications in designated leasing areas or on lands that later become designated leasing areas) applications for solar energy

development filed on lands before they became DLAs will not be subject to the new competitive leasing process, "if such applications are filed prior to the publication of the notice of intent or other public announcement from the BLM of the proposed land use plan amendment to designate the solar or wind leasing area." The initial Palen project ROW application was filed in 2007 and is not subject to competitive leasing and will be processed as a ROW application.

1.5.5 Land Use Plan Conformance and Consistency

This section supplements the information and analysis of the Land Use Plan Conformance and Consistency discussion that was provided in Section 1.3.2 of the PSPP PA/FEIS by describing the Palen Solar Project's relationship to the CDCA Plan and the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan).

California Desert Conservation Area Plan

The CDCA Plan area encompasses 25 million acres in southern California designated by Congress in 1976 through FLPMA. The CDCA Plan is a comprehensive, long-range plan that was adopted in 1980; it since has been amended many times. The CDCA is a 25-million-acre area that contains over 12 million acres of BLM-administered public lands in the California Desert, which includes the Mojave Desert, the Sonoran Desert, and a small part of the Great Basin Desert. The CDCA Plan provides regional guidance for BLM-administered lands within the Plan Area and establishes long-term goals for protection and use of the California desert. It is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The CDCA Plan establishes multiple use classes, multiple use class guidelines, and plan elements for specific resources or activities, such as motorized vehicle access, recreation, and vegetation. While the CDCA Plan, as amended by the DRECP, has eliminated the multiple use classes, the Proposed Action is analyzed under the classes because it is not subject to the DRECP.

The multiple use classes within the CDCA are:

- Class C (Controlled Use) – About 2 million acres are Class C. These include 69 wilderness areas (3,667,020 acres) created by Congress with the October 1994 passage of the California Desert Protection Act. These lands are to be preserved in a natural state; access generally is limited to non-motorized, non-mechanized means — on foot or horseback.
- Class L (Limited Use) – About 2 million acres are Class L. These lands are managed to protect sensitive, natural, scenic, ecological, and cultural resource values. They provide for generally lower-intensity, carefully controlled multiple uses that do not significantly diminish resource values.
- Class M (Moderate Use) – About 1.5 million acres are Class M. These lands are managed in a controlled balance between higher-intensity use and protection. A wide variety of uses such as mining, livestock grazing, recreation, energy, and utility development are allowed. Any damage that permitted uses cause must be mitigated.
- Class I (Intensive Use) – About 500,000 acres are Class I. These lands are managed for concentrated use to meet human needs. Reasonable protection is provided for sensitive natural values and mitigation of impacts, and impacted areas are rehabilitated when possible.

The Palen site is classified in the CDCA Plan as Multiple-Use Class (MUC) M (Moderate Use), as defined in the CDCA Plan Section 2 (Multiple-Use Classes). To accommodate the Palen Solar Project or any of the action alternatives, the CDCA Plan must be amended because the PSP site is not currently identified in the CDCA Plan for power generation or transmission. The amendment is necessary despite the fact both the Western Solar Plan and the DRECP have defined the Palen site as being appropriate for solar development. The Palen Solar Project was not subject to those plan amendments so the original plan amendment requirement remains. This necessary CDCA Plan amendment was analyzed in the 2010 Draft EIS and Potential CDCA Plan Amendment. Similarly, the 2013 Supplemental Draft EIS and Potential CDCA Plan Amendment for the PSEGS project analyzed the necessary plan amendment with a slight modification for the gen-tie alignment. The current project footprint analyzed in this Supplemental Draft EIS falls completely within the footprints evaluated in the 2010 and 2013 Draft EISs. Palen Project compliance with the multiple use class designations is discussed in Section 4.13 of this EIS/EIR (Lands and Realty).

Northern and Eastern Colorado Desert Coordinated Management Plan

The PSP is located within the BLM's NECO Plan area. The NECO Plan amended the CDCA Plan in 2002 to make it compatible with desert tortoise conservation and recovery efforts. The NECO Plan is a landscape-scale planning effort that covers most of the California portion of the Sonoran Desert ecosystem, including over 5 million acres and two desert tortoise recovery units. The Proposed Action and alternatives are consistent with the NECO plan: the PSP is not within a designated Desert Wildlife Management Area (DWMA) for desert tortoise or bighorn sheep, and it is not in a wilderness area.

1.6 Relationship to County Policies, Plans, and Programs

The Riverside County General Plan was developed as a comprehensive policy document concerning land use in the County. The General Plan Elements discuss countywide policies and plans aimed at managing development in the County more effectively. It has been updated through various revisions and amendments with the most recent revision completed in 2008 and the most recent amendment made in 2015 (Riverside County General Plan). Issues discussed under this plan are relevant to the water usage and renewable energy issues of the Proposed Action.

The proposed construction of groundwater wells at the project site (EDF RE, 2016) necessitates the inclusion of Riverside County as an authorizing entity for the Palen Project, since the wells access groundwater within the jurisdiction of the County. Relevant General Plan policies relating to water supply in Riverside County and the Proposed Action include:

- **OS 1.1** Balance consideration of water supply requirements between urban, agricultural, and environmental needs so that sufficient supply is available to meet each of these different demands.
- **OS 1.3** Provide active leadership in the regional coordination of water resource management and sustainability efforts affecting Riverside County and continue to monitor and participate in, as appropriate, regional activities, addressing water resources, groundwater, and water quality, such as a Groundwater Management Plan, to prevent overdraft caused by population growth.
- **OS 4.3** Ensure that adequate aquifer water recharge areas are preserved and protected.

According to the Riverside County General Plan, "Energy conservation and the substitution of renewable resources should be encouraged if these resources are to be preserved for Riverside County's future generations." Since many of the energy resources used within the County are non-renewable, the PSP, as a solar PV project, is in accordance with Riverside County's desire to encourage greater renewable energy usage and development in the County. In addition, the project site is located in an energy right-of-way corridor. Relevant policies relating to renewable energy in Riverside County and the Proposed Action include (Riverside County General Plan):

- **OS 11.1** Enforce the state Solar Shade Control Act, which promotes all feasible means of energy conservation and all feasible uses of alternative energy supply sources.
- **OS 11.2** Support and encourage voluntary efforts to provide active and passive solar access opportunities in new developments.
- **OS 11.4** Encourage site-planning and building design that maximizes solar energy use/potential in future development applications.
- **OS 15.2** Development of renewable resources should be encouraged.

1.7 Issues Analyzed in this Supplemental EIS/EIR

In addition to supplementing the PSPP FEIS and the PSPP FSA where supplementation is required, this Supplemental EIS/EIR summarizes and, where necessary, updates, all categories of environmental analysis presented in previous documents. This approach is taken in response to requests from the public to make this Supplemental EIS/EIR more accessible by avoiding just an "incorporation by reference" approach that would require simultaneous review of multiple prior environmental impact disclosure documents in order to view the complete analysis.

This Supplemental EIS/EIS addresses all resources that have the potential to be affected by activities related to the Proposed Action and alternatives. The issues are as follows:

- Air Resources
- Global Climate Change
- Cultural Resources
- Environmental Justice
- Lands and Realty
- Mineral Resources
- Multiple Use Classes
- Noise
- Paleontological Resources
- Public Health and Safety
- Recreation
- Social and Economic Impacts
- Soils Resources
- Special Designations
- Transportation and Public Access
- Biological Resources (Vegetation and Wildlife)
- Visual Resources
- Water Resources (Surface and Groundwater)
- Wildland Fire Ecology

1.8 Organization of the Supplemental EIS/SEIR

The format for this document generally follows the organization of the PSPP Final EIS. The specific sections included in the Supplemental EIS/EIR and the type of information to be found in those sections is described below.

Chapter 1 – Introduction, Purpose and Need

This chapter provides background information for the Palen Solar Project and the purpose of and need for the agency action. It also describes the BLM land use plan amendment process.

Chapter 2 – Proposed Action and Alternatives

This chapter fully describes the Proposed Action to be analyzed in the Supplemental EIS/EIR. This chapter also describes the alternatives that are being carried forward for consideration and the rationale.

Chapter 3 – Affected Environment

This chapter describes the affected environment associated with the construction, operation, maintenance, and decommissioning of the Palen Solar Project. Where this information has not changed since the issuance of the PSPP FEIS, the Supplemental EIS/EIR provides a summary of the information. By contrast, where the affected environment is new or has changed (e.g., in connection with the resource areas such water resources due to the drought), the Supplemental EIS/EIR supplements the data and other information that was provided in the PSPP Final EIS.

Chapter 4 – Environmental Effects

This chapter describes possible environmental consequences of the Palen Solar Project. This chapter also updates the cumulative scenario from the PSPP Final EIS and evaluates the cumulative effects of the proposed Palen Solar Project and the alternatives being carried forward for consideration in the Supplemental EIS/EIR based on the updated cumulative scenario.

Chapter 5 – Consultation and Coordination

This chapter describes public participation undertaken to date and additional opportunities that would occur throughout the NEPA and CEQA processes. It also lists agencies and organizations that will receive copies of the Draft SEIS/SEIR for review and lists the preparers of the document.

Chapter 6 – References

This chapter lists the references used in the analysis and discussion of all chapters and subsections in this document.

1.9 CEQA Reader's Guide

Because this Supplemental EIS/EIR is supplementing a CEQA equivalent document, rather than an EIR, Table 1-1 highlights the locations in the document where CEQA-specific requirements are found.

Table 1-1. Summary of CEQA Readers' Guide

CEQA-Relevant Information	Section in the Final EIS
Environmentally Superior Alternative	Chapter 2, Section 2.8 – CEQA Environmentally Superior Alternative
Mitigation Measures	Chapter 4 – Mitigation Measures section for each relevant issue area
Impact Significance Determinations	Chapter 4 – CEQA Significance Thresholds and Determinations section for each issue area

Table 1-1. Summary of CEQA Readers' Guide

CEQA-Relevant Information	Section in the Final EIS
Cumulative Impacts (CEQA-specific)	Chapter 4 – CEQA Significance Thresholds and Determinations section for each issue area
Growth-Inducting Effects	Chapter 4, Section 4.22 – Other CEQA Considerations
Energy Conservation (CEQA Appendix F)	Chapter 4, Section 4.22 – Other CEQA Considerations
Public Consultation and Notice	Chapter 5 – Consultation and Coordination

Alternatives and Project Objectives

The CEQA Guidelines require consideration of the No Project Alternative (Section 15126.6(e)) and selection of a range of reasonable alternatives (Section 15126.6(c)). CEQA also requires the identification of the environmentally superior alternative (CEQA Guidelines Section 15126.6(d) and (e)(2)). Under CEQA, alternatives should reduce environmental impacts and are required to meet most, but not necessarily all, of the project objectives.

Chapter 2 of the Supplemental EIS/EIR describes the No Action Alternative, and impact analysis is presented in Chapter 4 for each discipline. The environmentally superior alternative is discussed in Section 2.8, and the County and Applicant's CEQA objectives are presented in Section 1.3.

Mitigation Measures

CEQA requires the adoption of all feasible mitigation measures in order to reduce the severity of significant impacts as defined in CEQA (CEQA Guidelines Section 15092(b), 15043)). Feasible mitigation measures are included for each potentially significant impact as required by Section 15126.2(e) of the CEQA Guidelines. These measures are listed in the summaries of impacts for each relevant issue area in Chapter 4. Because the County of Riverside intends to use this Supplemental EIS/EIR in issuing permits, these mitigation measures and a mitigation monitoring plan (CEQA Guidelines Section 15097) will be adopted when the County certifies the Supplemental EIS/EIR. A Mitigation Monitoring and Reporting Plan will be included in the Final Supplemental EIS/EIR.

Significance Determinations

CEQA requires specific disclosure of the significance of each potential impact. There is no requirement that federal agencies determine significance when analyzing each impact in an EIS, and the term "significant" has a different meaning in NEPA.

Each resource analysis in Chapter 4 has a section entitled "CEQA Significance Thresholds and Determinations."[8] These sections include: (1) the relevant significance criteria from the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines; and (2) a CEQA significance determination (and rationale) for each significance criterion. Impact significance is assessed for

[8] Because this project is being analyzed in an EIS under NEPA, there is no requirement for federal agencies to classify impacts or to determine the significance of impacts; rather, the BLM must take a "hard look" at the impacts of the Proposed Project and its alternatives and determine whether they are adverse. Therefore, while these criteria are used as indicators to frame the analysis of the impacts under NEPA, any determination of significance is a determination under CEQA, not NEPA.

construction, operation, and decommissioning of each of the relevant alternatives, including the Proposed Action.

Cumulative Effects

Discussions of CEQA considerations in each section of Chapter 4 includes an assessment of whether the alternatives would represent a considerable contribution to cumulative impacts. This analysis is included in compliance with Section 15130 of the CEQA Guidelines. As appropriate, this analysis includes feasible options for mitigating cumulative impacts in accordance with Section 15130(b)(5). Past, present, and reasonably foreseeable potential projects contributing to cumulative impacts are identified in Section 4.1.4 (Introduction and Overview, Cumulative Scenario Approach).

Other CEQA-Relevant Sections

The following CEQA-specific requirements are addressed in Section 4.22 of this EIS (Other CEQA Considerations):

- Growth-inducing effects, in compliance with Section 15126.2(d) of the CEQA Guidelines.
- Energy conservation, in compliance with CEQA Appendix F.

Chapter 2

Proposed Action and Alternatives

CHAPTER 2
Proposed Action and Alternatives

2.1 Introduction

This Chapter describes the proposed Palen Solar Project (also called the Proposed Action, PSP, or the Project) in detail in Section 2.2. It also describes the No Action Alternative (called the No Project Alternative under the California Environmental Quality Act or CEQA) in Section 2.5, two action alternatives in Sections 2.3 and 2.4. This Chapter also presents a comparison of alternatives and agency preferences in Sections 2.6 and 2.7, and describes alternatives eliminated from detailed analysis in Section 2.9.

2.2 Proposed Action

The following subsections describe the Proposed Action, including the proposed structures and facilities, and the construction, operation, and decommissioning activities. It is based on the Plan of Development provided by the Applicant, EDF Renewable Energy (EDF RE), to the Bureau of Land Management (BLM).

The Proposed Action would also require a California Desert Conservation Area (CDCA) Plan Amendment. The Plan Amendment consists of formally identifying the project area as being suitable and available for large-scale solar energy development. This is more fully described in Section 2.2.8.

2.2.1 Right-of-Way Boundary

The Applicant has filed a revised application for a ROW grant to construct, operate, maintain and decommission the Project and a double-circuit 230 kV overhead transmission line (gen-tie) on the BLM-administered land described below.

Project Site and Access Road:

San Bernardino Base and Meridian

- Township 5 South, Range 17 East: Section 27, SW¼NW¼, NW¼SW¼, SE¼SW¼; Section 28, NW¼NW¼, SW¼NW¼, SE¼NW¼, SW¼NE¼, SE¼NE¼, S1/2; Section 29, NE¼, S1/2; Section 31, NE¼SE¼, SE¼SE¼; Section 32, entire section; Section 33, entire section; Section 34, NW¼, NW¼NE¼, SW¼NE¼, SE¼NE¼, S1/2.
- Township 6 South, Range 17 East: Section 2, NW¼SW¼, NE¼SW¼, NW¼SE¼, Lots 1 & 2 of the NW1/4, W½ of Lot 2 of the NE1/4, W½ of Lot 1 of the NE1/4; Section 3, NW¼SW ¼, SW¼SW¼, W½ of Lot 1 of the NW1/4, Lot 2 of the NW1/4, E½ of Lot 1 of the NE1/4, Lot 2

of the NE1/4; Section 4, NW¼SW¼, NE¼SW¼, SE¼SW¼, SE¼, Lots 1 & 2 of the NW1/4, Lots 1 & 2 of the NE1/4; Section 5 Lots 1& 2 of the NW1/4, Lots 1 & 2 of the NE1/4; Section 6, E½ of Lot 2 of the NE1/4.

Gen-Tie Line:

San Bernardino Base and Meridian

- Township 5 South, Range 17 East: Section 19, SE¼NE¼, SW¼NE¼, S½ of Lot 1 of the NW1/4, Lots 1 & 2 of the SW1/4; Section 20, SW¼NW¼, NW¼SE¼, NE¼SW¼, NW¼SW¼, SW¼SE¼, SE¼SE¼; Section 21, SW¼SW¼;
- Township 5 South, Range 16 East: Section 24, S½SE¼; Sec. 25, N½NW¼, NW¼NE¼; Sec. 26, N½N½; Sec. 27, N½N½; Sec. 28, NE¼NE¼, W½NE¼, W½SE¼.

The Proposed Action is the construction and operation of a 500 megawatt (MW) nominal capacity, alternating current (AC) solar PV energy-generating project that would be expected to produce approximately 1,598,700 megawatt-hours per year[1] (MWh/y). The Project would be located in Riverside County, 10 miles east of Desert Center on federal public lands administered by the BLM, Palm Springs-South Coast Field Office. The project site is within the Riverside East Solar Energy Zone (SEZ) of the BLM's Western Solar Plan. It is also located on lands identified within a Development Focus Area (DFA) under the Desert Renewable Energy Conservation Plan (DRECP), which amends the CDCA Plan (see Section 1.5.3, regarding the Proposed Action's relationship to the current CDCA Plan). Within the 4,221-acre ROW boundary, 3,381 acres would be permanently occupied by major project components and another 97 acres would be temporarily disturbed. Approximately 743 acres of the land within the ROW boundary would not be disturbed. Figure 2-1 (all figures are presented in Appendix A) illustrates the solar field boundaries and the transmission line route for the Proposed Action.

2.2.2 Major Project Components

The structures and facilities presented in the following sections are based on the most recent information provided by the Applicant. However, the project disturbance area, equipment used, and schedule estimates may be reduced and/or modified consistent with this analysis and based on the final engineering and permit requirements for the project components. All final project design elements will be identified in the approved Plan of Development prior to construction.

The proposed solar facility would consist of several main components:

- A single large solar field with two smaller adjacent solar fields for a total of 3 fields;
- Two-hundred power blocks of electrical generating capacity of 2.5 MW each for a combined capacity of 500 MW;
- An electrical substation (on the project site);
- An operations and maintenance building;
- Up to 10 on-site groundwater wells;

[1] The number of megawatt-hours per year is a measure of the system's energy, which is the amount of power generated by the system during a year.

- One temporary 28-acre construction laydown area;
- A roadway system consisting of internal and perimeter roads;
- A main access road from the Interstate 10 (I-10)/Corn Springs interchange;
- A 6.9-mile double-circuit 230 kV gen-tie extending from the project substation to the existing Southern California Edison (SCE) Red Bluff Substation; and
- An access road parallel to the gen-tie line.

Table 2-1 presents a breakdown of site acreage for each solar facility component.

Table 2-1. Project Disturbance Footprint

Project Component	Temporary Disturbance (acres)[1]	Permanent Disturbance (acres)[1]
Solar Field Components		
Solar panel field[1]	0	3,360
Construction Laydown, Parking and Administration area/O&M Facility[1]	14	3
Access corridors for emergency & maintenance vehicles[1]	0	835
On-site substation[1]	0	5
Area permanently covered by at-grade items (footprint of piles, project's collection system, transformer, PV combining switchgear, on-site substation, on-site overhead line poles, O&M Facility)[1]	0	35
Approximate maximum area shaded by PV modules[1]	0	1,200
Main Project Access Road	0	2
Generation Tie-Line Right-of-Way (6.9 Miles x 120' wide)	83	19
Generation Tie-Line Access Road[1]	0	17
Generation Tie-Line Structures[1]	0.3	2
Temporary Construction Pull-Sites[1]	7.5	0
Total Disturbance	97	3,381

1 - Of the 4,221 acres within the ROW boundary, 3,381 acres would be permanently disturbed and 97 would be temporarily disturbed. These areas may overlap so the acres cannot be added.
Source: EDF RE Plan of Development

2.2.3 Project Features

Solar Photovoltaic Panels and Generation Area

The proposed solar PV technology involves the direct conversion of photons (i.e., sunlight) into electricity. PV modules (also called solar panels) absorb solar radiation and convert it into direct current electricity. This direct current (DC) power is then converted into alternating current (AC) electricity for delivery to the electrical grid system. This conversion occurs when DC flows through a device called an inverter, which converts the electrical characteristics to AC that can be tied to the power distribution system for power delivery. The electrical current produced is directly dependent on how much light strikes the module. Multiple PV panels are wired together to form an array, an arrangement that increases the total system output.

The Project may use a variety of PV technologies, including, but not limited to:

- Crystalline silicon panels
- Copper Indium Gallium Selenide panels

The manufacturer has not been selected, because the Applicant will determine the most efficient technology solution just before the time of construction, and will identify the technology in the approved Plan of Development. A Hazardous Materials Business Plan would be written to incorporate the selected technology.

The Applicant proposes to use a motorized single-axis tracking system to allow panels to rotate from east to west, following the movement of the overhead sun through the day. The tracking system with solar panels installed would be up to 18 feet high. The tracking system would be controlled by a wireless communication system; no communication wiring would be needed. The tracking system would be designed for local wind loading and would be constructed of galvanized and stainless steel.

The solar field would cover 3,360 acres of the approximately 4,221-acre ROW application project area, as shown in Figure 2-2 (all figures are in Appendix A). The field would consist of 200 power blocks each producing 2.5 MW AC. A block consists of four quadrants of 25 rows with 27 panels each. Each block would require two 1.25 MW inverters, set along the access roads, in the middle of the panel array area. Figure 2-3 illustrates a typical low-profile photovoltaic array, and Figure 2-4 illustrates a typical array configuration. Figure 2-5 shows a typical module, and Figure 2-6 shows typical tracker specifications.

Foundations for the rows of arrays would consist of galvanized steel beams driven into the ground by means of a small pile-driver. A preliminary review by civil engineers suggests that this would be sufficient to meet geotechnical requirements for wind stability. Site-specific soil testing would be required to validate the preliminary engineering. If testing indicates that further foundation support is required, then the galvanized steel beams would be attached to concrete ballast.

The rows of panels would be spaced at a distance that accounts for engineering and shading constraints with some micro-topography compensation. Access roads between the 2.5 MW power blocks would be covered in aggregate. The roads would allow fire and maintenance vehicle access.

Operations and Maintenance Building

The Project would require either an onsite or offsite Operations and Maintenance (O&M) building. If an onsite O&M building were located on the site, it would be located in the southwest portion of the site (see Figure 2-2). The building would be up to 3,600 square feet and would be a prefabricated building set on concrete slab-on-grade poured in place. The building would be an estimated 19 feet tall at its highest point. The facility would be designed for project security, employee offices, and parts storage.

Electrical Collection System

The PV modules would be electrically connected by wire harnesses and combiner boxes that would collect power from several rows of modules and feed the DC power to the PV collection system.

An enclosed power inverter would convert the DC electric input into grid-quality AC electric output. The inverter station would be up to 10 feet tall. The AC electrical output would be transmitted from the inverter station to an adjacent transformer, under 10 feet tall. The transformer would step up the voltage of the AC electrical input and then would transmit the power via the PV collection system to the project substation. The PV collection system connecting the panels to the inverters would be underground and utilize trenches for the electrical cabling, which would be 3 feet deep and from 3 feet to 6.5 feet wide. Any trenching associated with the collection system would be backfilled with excavation spoils.

On-Site Substation

The project substation would be located in the northern portion of the site and would cover an estimated 5 acres (see Figure 2-2). Figure 2-7 (in Appendix A) depicts the electrical plan for the on-site substation. At the on-site substation, the voltage of the electricity would be transformed to 230 kV and routed via a new gen-tie line to the SCE Red Bluff Substation. The onsite substation would be surrounded by 12-foot security fencing and locked gates.

Electric equipment insulating materials would be specified to be free of polychlorinated biphenyls (PCBs). The substation would include appropriate spill containment systems for equipment.

The substation would include an electrical switchyard occupying an estimated 400 feet long and 400 feet wide area immediately adjacent to the substation and within the substation fenceline. Surge arresters at the high-voltage bushings would protect the transformer(s) from surges caused by lightning or other disturbances. The transformer(s) would be set on a concrete pad within a containment area designed to hold any accidental releases of transformer oil. All transformers would be free of polychlorinated biphenyls. The high-voltage side of the transformer(s) would be connected to the plant's substation.

A small control building would be located nearby the switch gear and would be accessible to authorized high-voltage personnel only. The building would house electrical control equipment, battery/DC systems for device operation, safety relays, and other similar electrical equipment. This building would interconnect with the main control room in the operations building for monitoring of the substation.

Site Security, Fencing, and Lighting

Due to the high voltages involved and the high value of the solar panels, site security is critical to ensure the safety of project personnel and the public and to protect the solar assets. At the start of construction, site access would be controlled for personnel and vehicle access. During operation, the Project would have a permanent security fence. The fence would be 8 feet high and would have top rail, bottom tension wire, and three strands of barbed wire mounted on 45 degree extension arms. With the strands of barbed wire, it would have an overall height of no more than 12 feet from the bottom of the fabric to the top barbed wire. The posts would be set in concrete. The security fence would be installed at the start of construction although it may be preceded by mowing or vegetation clearance as required. The temporary laydown area is expected to be contained within the defined solar facility boundaries, and thus no additional temporary fencing would be required.

Security during project operation would be enhanced with motion detectors, facility lighting, and cameras in key locations. Exterior lighting would be required to comply with current Title 24 regulations from the State of California and would be coordinated with the California Department of Transportation (Caltrans) to comply with exterior lighting regulations along Interstate 10. During construction, security would be maintained as required by the Engineering, Procurement, and Construction (EPC) contractor or a suitable subcontractor to maintain public safety and the security of the facilities.

Prior to panel installation, the security fencing would be erected around the entire perimeter of the project area, with an access gate in the southwesterly corner of the site at the access road and immediately north of the project substation.

A controlled access gate would be located at the entrance to the facility off the I-10 Corn Springs Road exit. The site gate would be swing or rolling access gates. Access through the main gate would require an electronic swipe card, preventing unauthorized visitors from accessing the facility or construction area. All visitors would be logged in and out of the facility during normal business hours. Visitors and non-employees would be allowed entry only with approval from a staff member of the facility or from the BLM in coordination with facility personnel. Visitors would be issued passes that are worn during their visit and returned to the main office when leaving.

Lighting at the facility would be restricted to areas required for safety, security, and operation, such as the on-site substation. The Project would use portable lighting for any emergency work that must occur on panels at night. Security lights would stay off and use motion sensor technology that would turn lights on and be triggered by movement at a human's height. The level and intensity of lighting during operation would be the minimum needed. Portable lighting may be used occasionally and temporarily for maintenance activities during operation.

Access Roads

The main site access would be a new, gravel road of less than 1/4 mile in length, with a 24-foot-wide travel surface. The access road would be constructed from a point just north of the I-10/Corn Springs Road entrance/exit ramps east to the project site entrance. The new entrance road would enter the site at its westernmost extent, near the temporary construction laydown area. This road would include a 12-foot-wide shoulder with gravel surface for truck staging on one side to preclude traffic interferences. An estimated 59-foot permanent disturbance (24-foot roadway width, plus a 12-foot-wide shoulder on one side and a 3-foot-wide shoulder on the other and a 10-foot ditch on either side) is anticipated.

All internal access roads would be up to 24 feet wide and would be cleared and graded; north-south access roads would be covered with aggregate. An up to 30-foot-wide perimeter road separating the solar arrays from the perimeter fence would be constructed within the entire perimeter of the Project. The roads would be constructed to allow fire and maintenance vehicle access. Aggregate for the roads would be sifted from the onsite soils, using gravel from the southwest corner of the project site. The Project would require an estimated 58,300 cubic yards of aggregate for onsite roads.

Preliminary layout and road design is based on detailed topographic maps and an on-site walk through by civil engineers. Standard engineering practices are incorporated into the road design

and all applicable engineering designs would be applied to minimize soil erosion as caused by normal seasonal precipitation.

Water Sources

During the 30-month construction period, an estimated 497 to 700 acre-feet of water per year would be needed for such uses as soil compaction, dust control, and sanitary needs for construction workers. Operational water use is estimated at 15 to 41 afy for panel washing and general maintenance activities. Well use would be metered in accordance with agency requirements.

The Proposed Action would use water from up to 10 onsite wells (depending on the supply scenario; see descriptions below) placed throughout the project site to facilitate construction dust control watering. Eight of the on-site wells constructed to provide construction water would be used during the construction phase only, then decommissioned in accordance with applicable regulations. Two of the onsite wells would be used also during operations.

Water may also be obtained from off-site sources, or it may be a combination of onsite and offsite sources. Onsite wells would be placed strategically within the project site to facilitate construction dust control watering and operational water needs. The locations of these wells would be determined based on the final engineering.

The Applicant has proposed two construction water supply scenarios:

- **Water Supply Scenario 1:** Over a 30-month period, the Applicant would purchase up to 30% of construction water from two wells operated by the Riverside County Service Area (CSA) 51 in Lake Tamarisk, at Desert Center, approximately 10 miles west of the project site. The water would be transported from Lake Tamarisk to the project site by truck. The remaining 70%, or more, of construction water would be from up to 7 onsite wells on the Palen Solar Project property. All operational water would be produced from the on-site wells.
- **Water Supply Scenario 2:** All construction and operational water would be supplied from up to 10 onsite wells. Water trucks would transport water from the onsite wells utilizing the internal roads within the project boundary.

Three large temporary storage tanks would be used for water storage throughout the site during construction.

Regarding the adequacy of groundwater supply in the area, the Applicant has completed a Water Supply Assessment (see Appendix G). The drought status for this area has been lifted. Based on historical information provided by CSA, any local drawdown resulting from the temporary increase in pumping during construction is expected to rebound after construction is complete.

Portable toilets would be provided during construction, as needed, and would be maintained by the vendor and emptied offsite consistent with regulations. No water would be required for this purpose.

Operational water usage is estimated at 15 to 41 acre-feet per year for panel washing and general maintenance activities. During operation, water required for annual panel washing would be drawn from one of the on-site construction wells. Bottled drinking water would provide potable

water. Up to two permanent, 12,000-gallon above-ground water storage tanks would be used for O&M tasks and facilities, including on-site fire-fighting. During operation, wastewater would be generated from bathroom and shower facilities located within the O&M building. Domestic wastewater would be treated and disposed at the site using a septic disposal system consisting of septic tanks and leach field, permitted by the Riverside County Health Department and installed in a manner that would be compliant with their requirements. The specifications for the septic system would be determined by engineering code and County permit requirements.

Construction Staging

The staging area would include temporary construction trailers to manage construction, a parking area, and site security facilities. Portable toilets would also be located in this area.

A temporary construction laydown area would be located in the southwest portion of the site. This area would be used for laydown of materials, staging of traffic, and for a temporary concrete batch plant, if required.

Concrete Batch Plant

During construction, existing commercial ready-mix concrete supply would be used where feasible. If it is unavailable, a temporary, two-acre concrete batch plant would be installed in the construction laydown area. The batch concrete materials would be purchased from commercial sources. Unmixed cement would be stored in a designated area adjacent to the temporary batch plan. The batch plant would be removed at the end of construction.

Erosion Control and Stormwater Drainage

The Project proposes to preserve existing hydrologic flow rates from the northern boundary of the project site, and would use grading techniques that maximize the sheet flow of stormwater from natural drainage washes across and through the site. Water would exit the site following existing natural contours and flow paths. Impervious groundcover would be limited to the PV panel foundations, inverter and transmission equipment pads, access roads, a small parking area, the O&M facility, and the substation.

The land contains dry washes that flow predominantly from the southwest, through the flood control culvert system on the I-10 and then to the northeast away from Interstate 10. These dry washes and are fed by stormwater runoff from the mountain range to the south of the I-10. The project design would incorporate layout and construction techniques to minimize disturbance to the desert washes, and would not require channelizing flows from the washes. Rather, the project would utilize grading techniques to maximize the sheet flow of stormwater from existing natural drainage washes across and through the Project Site. Existing small to moderate ephemeral washes would remain intact at locations capable of being traversed by installation equipment. Larger washes would require grading or modification. Arizona crossings[2] may also be used or where roads cross smaller washes, a slight grading of the channel bank would allow vehicles to cross the

[2] An Arizona crossing is a type of road crossing that allows a waterway to run over a road. Generally, the road segment where water would cross is concrete, even if the remainder of the road is unpaved.

wash. Crossings would need to be in accordance with the Lake and Streambed Alteration Agreement issued by the California Department of Fish and Wildlife (CDFW).

The use of retention basins would be determined with final engineering with up to six retention ponds possible at key locations, see Figure 2-2. The largest retention pond would be approximately 4 acres, three medium ponds would be approximately 2 acres, and the two smallest ponds would be 1 acre each.

After the earthwork, grading, and pad construction has been completed, a stormwater conveyance system and permanent BMPs would be put into place. The site's final grade would coincide with the existing grade such that stormwater from within the PV field would maintain sheet flow and exit the site in existing desert drainage areas.

Control structures, such as small earthen berms and swales, would likely be used to protect the solar block installations. Discharge from these berms, if needed, would be into existing intermittent streams documented on the property. Intermittent streams would be defined and protected within the project area. Rip rap would be installed at the discharge point to these streams within the project boundary to reduce flow energy and allow water absorption. If required by final engineering design, up to six retention basins may be constructed on the downstream (northerly) portion of the site, designed to minimize the volume and concentration of water leaving the project area. In areas where grading is required, such as the site for inverters and transmission facilities, measures would be necessary to minimize erosion and control runoff.

Fire Safety

Fire protection would be provided to limit risk of personnel injury, property loss, and possible disruption of the electricity generated by the Project. Fire protection would include minimizing flammable materials in the solar field, such as vegetation.

A Fire Prevention Plan was prepared for construction, operation, and decommissioning of the facility (EDF RE, 2016b). The plan would include measures to safeguard human life, preventing personnel injury, preserve property and minimize downtime due to fire or explosion. Of concern are fire-safe construction, reduction of ignition sources, control of fuel sources, availability of water, and proper maintenance of firefighting systems. The plan would be coordinated with the BLM Fire Management Officer and Riverside County Fire Department.

During construction, the fire suppression system would be placed in service as required by Riverside County or BLM Fire. Prior to installation of the facility's permanent fire suppression system, fire extinguishers and other portable fire-fighting equipment would be available onsite, as well as additional water for use at the on- or off-site O&M facility. These fire extinguishers would be maintained for the full construction duration in accordance with local and federal Occupational Safety and Health Administration (OSHA) requirements.

Locations of portable fire extinguishers would include, but not be limited to, office spaces, hot work areas, flammable storage areas, and mobile equipment such as work trucks and other vehicles. Fire-fighting equipment would be marked conspicuously and be accessible. Portable equipment would be routinely inspected, as required by local and federal laws, ordinances, regulations, and standards, and replaced immediately if defective or needing charge.

Electrical Interconnection

Electricity generated by the Project would be conveyed to the SCE Devers–Palo Verde #2 (DPV2) 500 kV regional transmission line through an electrical generation tie-line constructed between the Palen Solar Project electrical substation and the Red Bluff Substation. The Red Bluff Substation is located about 4 miles due west of the solar site, adjacent to the south side of I-10.

The gen–tie line proposed for the Project would be 6.9 miles long. The route is essentially the same as was proposed for the Palen Solar Power Project (PSPP) except for a minor route adjustment near the western end of the route and around the Red Bluff Substation. This change was proposed as part of the Palen Solar Energy Generation System (PSEGS) project as a result of construction of the NextEra Desert Sunlight gen-tie line. This adjustment would align the Palen Solar Project gen-tie line adjacent to the NextEra Desert Sunlight gen-tie line, minimize crossings over I-10 and ensure easy entry into the Red Bluff Substation. Figure 2-1 shows the proposed gen-tie line alignment.

The gen-tie route would exit the northernmost portion of the solar site and head northwest for 1.2 miles, then due west for 0.5 miles, then southwest for 0.7 miles. The route would then head west for approximately 3.5 miles, then head due south for 1 mile to enter the Red Bluff Substation. Self-weathering steel monopoles approximately 115 to 135 feet tall would be used for the gen-tie line. Typical spans between poles would be 900 to 1,100 feet. The tower foundations for the gen-tie line would require ground disturbance to a depth of 20 to 30 feet. No permanent spur roads would be required to maintain the gen-tie line; however, there would be a maintenance access road along the route.

Telecommunications Equipment

Telecommunication equipment for the project site will reside within the on-site substation structure. All fiber optic communication lines necessary to support the on-site telecommunication equipment would be located on the same poles used to support the gen-tie line.

The major communication system would be the Supervisory Control and Data Acquisition (SCADA) system. The SCADA system is composed of industrial Programmable Logic Controllers (PLCs) hardware and software, field instrumentation, meteorological stations, and communications devices designed for site monitoring, control and historical trending of the solar plant. Meteorological stations would be a maximum of 10 feet tall.

Communication between employees during both construction and operation phases would be through handheld radios.

Aviation Lighting

The Applicant anticipates no aviation restrictions for this photovoltaic plant because all structures would be lower than the 200-foot height standard that triggers Federal Aviation Administration Part 77 Obstruction Evaluation Consultation.

2.2.4 Construction Activities

During construction, the following services would be provided by subcontractors:

- Environmental Health Safety Training
- Unexploded ordnance surveys
- Site security
- Site first aid
- Construction testing
- Site fire protection and extinguisher maintenance
- Furnishing and servicing of sanitary facilities
- Trash collection and disposal
- Disposal of hazardous materials and waste in accordance with local, state, and federal regulations

Construction Schedule

Construction is anticipated to commence during the fourth quarter of 2017, and continue through the second quarter of 2020 (30 months). The Project may be phased. Commercial operation may also be phased with the operation of phases occurring between 2018 and 2020.

Construction would begin with pre-construction surveys, construction of the main access road, security fencing around the Palen Solar Project site, biological resource exclusion (if desert tortoise are found to be present), clearing and construction of a laydown yard, site grading and preparation, construction of the O&M building, parking area, and pad mounts for transformers. Construction would continue with the installation of temporary power, construction of on-site roads, construction of the on-site wells, construction of the project substation, and assembly and installation of panel blocks and wiring.

The construction work schedule would be 8 hours per day Monday through Friday. Typically, the work day would consist of one shift beginning as early as 7 a.m. and ending as late as 7 p.m. The work schedule may be modified throughout the year to account for the changing weather conditions. For instance, during hot weather, it may be necessary to start work earlier to avoid pouring concrete during high ambient temperatures or for the health and safety of workers. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities (e.g., PV block construction, foundation pouring, or working around time-critical shutdowns and constraints). During the startup phase of the Project, some activities might be performed over the weekend.

Site Access and Circulation

Construction access will be from the primary access road via the Corn Springs Road interchange from I-10. The existing dirt road would be improved and widened to accommodate construction traffic. Materials and equipment would be delivered by truck. Worker access would be controlled through a locked entrance gate in the southwest corner of the site.

Truck and worker vehicle traffic would be managed according to a construction Traffic Control Plan (TCP) to be prepared by the EPC contractor and in coordination with Caltrans. A work schedule and end-of-shift departure plan would be designed to ensure that stacking does not occur

at intersections necessary to enter and exit the project site. The TCP would consider using one or more of the following measures designed to prevent stacking: staggered work shifts, off-peak work schedules, and/or restricting travel to and departures from the site.

Construction Workforce

The construction workforce would largely be recruited from within Riverside and San Bernardino Counties from Applicant-hosted job fairs. Certain non-local specialty trade workers supporting proprietary plant equipment/components and construction processes may also be employed on a short-term basis during construction.

The on-site workforce would consist of laborers, craftsmen, supervisory personnel, supply personnel, and construction management personnel. The on-site workforce is expected to reach its peak of approximately 1,145 individuals with an average construction-related on-site workforce of 566 individuals.

Construction Waste Management

Portable toilets would be provided on-site during construction and would be emptied in an approved off-site facility; domestic wastewater generated during construction would not be disposed of on site.

Hazardous Materials

Storage, handling, and use of all chemicals would be conducted in accordance with applicable laws, ordinances, regulations and standards. Chemicals would be stored in appropriate facilities. Bulk chemicals would be stored in storage tanks, and other chemicals would be stored in returnable delivery containers. Chemical storage and chemical feed areas would be designed to contain leaks and spills. Workers would be trained to handle hazardous wastes generated at the site.

Hazardous materials employed on site may include:

- Diesel fuel and gasoline for vehicles
- Motor, hydraulic fluids, and lubricating oils for machinery and vehicles
- Solvents and adhesives
- Soil stabilizers
- Mineral oil for transformers
- Approved herbicides
- Batteries, paints, thinners, and cleaning solvents

None of the major components of the solar field are considered hazardous materials; they are primarily glass, metal, cement, and wire. The Project may use a variety of PV technologies including, but not limited to crystalline silicon panels or copper indium gallium selenide panels. None of the panels being considered contain materials that are classified as hazardous wastes because the chemicals within PV modules are highly stable and would not be available for release to and interaction with the environment. If a panel is broken, the pieces would be cleaned up completely and returned to the manufacturer for recycling. EDF RE has multiple existing panel contracts, which require manufacturers to collect and recycle any broken or malfunctioning panels.

Construction Vehicles and Equipment

The peak number of construction-related automobile trips would be up to 1,145 one-way trips per day (based on an anticipated 30% of workers using carpools). On average, the construction on-site workforce is expected to be 566 individuals with 20 to 30 one-way truck trips per day. Anticipated average round trip miles traveled per vehicle for deliveries is 331 miles. It is estimated that trucking water to the project site from the Lake Tamarisk Country Club would require 10 (4,000 Gallon) trucks per day, over a 5-day working week for the length of the construction schedule. It is estimated that 1 truck trip averages 26 miles for each roundtrip.

The construction vehicles used on site and the estimated truck trips are presented in Table 2-2, Construction Vehicles, and Table 2-3, Truck Deliveries.

Table 2-2. Construction Vehicles

Items	Units	Duration of Use (hrs/day)	Duration (months)	Purpose
Water truck	10	8	33	Dust Control
Front end loader	10	8	33	Material movement
Scrapers	17	8	18	Grading
Bulldozers	7	8	18	Grading
Graders	17	8	18	Grading
Hydraulic Ram	33	8	26	Foundation installation
Forklifts	26	8	34	Material stating
Backhoes	26	8	26	Excavation
Crane	7	8	22	Inverter placement
Tractor	20	8	33	Material staging
Pickup truck	99	8	34	Transportation
ATV	132	8	34	Transportation
Pile driver	33	8	26	Post installation
Trencher	7	8	26	Underground work (AC/DC/Fiber optic cables)
Small sheepsfoot	13	6	26	Compaction
Power screener	10	6	18	Soil processing
Cable plow	3	8	26	Underground cable installation

Source: EDF RE, 2016a.

Table 2-3. Truck Deliveries

Item	Truck Deliveries	Vehicle Type	Axles	Deliveries per Day	Duration (months)
Modules	8,210	53' Flatbed	5	10-12	22
Foundation posts	1,436	48' Flatbed	5	3-4	20
Racking	1,815	48' Flatbed	5	3-4	20
Cable	188	53' Flatbed	5	0-1	13

Table 2-3. Truck Deliveries

Item	Truck Deliveries	Vehicle Type	Axles	Deliveries per Day	Duration (months)
Inverters	343	48' Flatbed	5	0-1	22
Transformer	3	53' Flatbed	5	0-1	1
Concrete	545	Concrete Mixer	3	3-5	12
BLM-approved road base	1,650	Dump truck	3	10-12	10
Trash (haul off)	198	40-YD roll-off	3	1-2	34
Fencing	83	48' Flatbed	5	0-2	5
Electrical equipment	132	48' Flatbed	5	0-2	34

Source: EDF RE, 2016a.

Surveying and Staking

Site preparation would begin shortly after final permitting is complete. Final surveying, to accommodate existing ROW grants and setback requirements for I-10 and other existing ROW would precede any site work. Surveying would be completed by a California licensed land surveyor and approved by the BLM. The surveyor would complete a boundary survey and a constraints map and file these with the Riverside County Surveyor's Office and the BLM Field Office. The surveyor would provide construction staking throughout the duration of the Project to ensure that improvements are properly located in relation to the project boundary and existing ROWs.

Grading, Vegetation Removal, and Treatment

The Applicant proposes to use site preparation techniques that would minimize the required volume of earth movement, including a "disc and roll" technique that uses grading equipment to till the soil over much of the solar facility site and then roll it level, as well as "micro-grading" or "isolated cut and fill and roll" of other areas of the site to trim off high spots and use the material to fill in low spots.

Much of the solar field would be impacted by some form of ground disturbance, either from compaction, micro-grading, or disc-and-roll grading. Scarifying, where required, would disturb the soil to several inches and potentially allow some roots to remain to assist in soil stabilization and reduce the possibility of erosion.

The Applicant would minimize grading and vegetation removal for the Project. When feasible, construction activities will implement drive and crush rather than grading. Construction equipment would drive over and crush native plants to minimize impacts to the roots of desert shrubs. Drive and crush is expected to reduce the recovery time of desert shrubs within the temporary construction areas. Mowing and/or trimming will be implemented wherever possible, allowing some native vegetation to remain in place under the PV panels.

Site grading within the project would be limited to the major access roads, the inverter pad locations, channel banks and streambeds (as required to allow vehicle access), transmission tower foundations and work areas. In addition, grading would be required for all of the ancillary facilities in the northwest corner, including the O&M building, parking area, water storage facility, septic field, laydown area, and substation. If there is slope greater than 1 percent at the set-back boundaries of defined intermittent streams, then grading would be completed to reduce the slope

and make continuous with the solar panel area. If shoulders are created at the stream set-back, then they may be protected by rip rap or other rock. Excavation would be limited to the trenches for the electrical conductors that connect the PV modules and the inverters to the substation.

Access roads for installation, maintenance, and cleaning of the photovoltaic panels would be installed at intervals within the solar field. These roads would be moderately graded to allow regular access with a small vehicle for panel washing and maintenance. Vegetation over 18 inches high would be removed to avoid interaction with the solar panels. Annuals and smaller perennials would remain. Continued weed management in cleared areas would be maintained through regular monitoring and targeted application of the herbicide glyphosate, which is approved for use on BLM lands and/or by occasional blading. Additional soil disturbance by regular operation of the plant is not expected.

Key considerations for vegetation treatment of the site would include:

- Soil disturbance in support of construction would increase the possibility of introduction of invasive species. Regular monitoring and weed management would be required during construction. Ongoing maintenance in the solar field may include treatment of noxious weeds by targeted spraying with Roundup. Roundup is an herbicide approved for use on BLM lands in California in the Record of Decision (ROD) on the 2007 *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (Herbicide PFEIS) and BLM 2014 Listing of Approved Herbicide Formulations (BLM, 2007; BLM, 2014).
- Where temporary access is needed to install facilities, such as along the perimeter fencing, no removal of existing vegetation or grading would occur. Instead, equipment would drive over or around existing desert scrub vegetation without direct removal. Crushed vegetation is much more likely to show a rapid recovery than where vegetation is removed and reseeded, or where soils are disturbed. No disturbance outside the final perimeter fencing would be anticipated.
- Revegetation with native species would be implemented where feasible in areas of temporary disturbance.

The Applicant would implement a Weed Management Plan (WMP) that describes non-native, noxious, or invasive weed species that occur or are likely to occur at the site and prescribes management actions to monitor and eradicate specified species. The WMP and the use of herbicides for the Project would tier from the BLM's 2007 Herbicide PFEIS and ROD, which is incorporated herein by reference. It would describe applicable regulations for the use of herbicides on federally managed lands in California, and provide the basis for proper management and use of herbicides at the site.

Typical operations and maintenance requirements are low for native landscapes once established. The WMP would include weeding, annual pruning, and soil monitoring if necessary. Weeding would occur frequently during the initial growth period to ensure that invasive plants do not mature and set seed. Weeding activities would follow the approved WMP. Once the native plant species are established, weeding would likely be less frequent.

Vegetation would be allowed to re-grow within the solar panel field. It would not be allowed to grow above 18 inches in the areas below the panels to prevent growth into electrical connections

that could create a fire hazard, or disrupt panel performance. At a minimum, the access roads in the photovoltaic field would be maintained free from significant vegetation through the use of targeted herbicide spraying, occasional scarifying, or weeding to reduce fire hazard and allow access to the panel arrays.

Solar Array Assembly and Construction

The panel field would be constructed as follows. After the site is prepared, and graded to the extent required, the panel field would be laid out by installing galvanized steel beams directly into the ground by means of a small pile-driver.[3] A preliminary evaluation suggests that this foundation system would be sufficient to meet geotechnical requirements for wind stability. Soil tests would be required to validate the preliminary engineering. If tests conclude that additional foundation support is required, then the steel beams would be attached to concrete ballasts that sit on the ground surface. No welding would be required for assembly. Once the foundations are secure, trenches would be dug along the perimeter of the 2.5 MW units to connect the inverter blocks with electrical. Next, the framing would be bolted to the support beams. Once framing is complete, panels would be delivered on site and installed on the frames. Then the pre-poured concrete inverter pads would be delivered and laid down. Lastly, the inverters would be secured to the pads, and the electrical wiring to the inverters would be completed.

In general, material delivery for the solar field would occur in a steady flow, and panels and framing structures would be delivered throughout the solar field adjacent to the 2.5 MW unit locations as needed. The temporary staging areas for each unit would be subsumed by subsequent array development as the solar field is built out. Construction would proceed in an assembly-line fashion throughout the solar field.

Lighting during construction would be limited to the staging area for the construction trailers, parking area, and site security facilities and would be limited to that needed to ensure safety. It would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area. Lighting used at the site will have a warm color temperature of 2700K to reduce the introduction of blue lights into the environment. During construction, the primary source of electric power would be the existing distribution lines that run along the southern and northwestern boarders of the project site. Temporary portable diesel generators would be used as needed.

Gravel, Aggregate, and Concrete Requirements and Sources

Aggregate would be used within the generation facility, common areas, and parking lots. Gravel would be required for the north-south access roads between blocks (but not for the less often used east-west routes). Aggregate or other similar materials would be procured from onsite sources or trucked to the site from a BLM-approved commercial mine located 6 miles from the project site. Road aggregate required for onsite access roads is estimated to amount to 58,300 cubic yards.

Concrete would be required for the inverter pads and the substation. Inverter pads and concrete ballast for panel supports, if needed, would be pre-cast and transported to the installation site by truck. If concrete is not transported to the site in pre-cast form, a temporary, two-acre concrete

[3] Beams are generally shaped like a capital H in cross section, so they are called "vertical H-pile steel beams."

batch plant would be installed in the construction laydown area. Unmixed cement would be purchased from commercial suppliers and stored in a designated area adjacent to the temporary batch plant. Aggregate required for concrete manufacturing would be obtained from commercial suppliers and transported to the site.

Construction Water Requirements and Sources

During the 30-month construction period, an estimated 497 to 700 acre-feet of water per year would be needed for such uses as soil compaction, dust control, and general needs for construction workers. The majority of the construction water use would occur during site grading.

As described in Section 2.2.3 (Water Sources), water would be obtained from 10 onsite wells, off-site sources, or a combination of the two. The offsite source of water would come from the CSA 51 wells located at the Lake Tamarisk Country Club in Desert Center. It is estimated that trucking water to the project site from the Lake Tamarisk Country Club would require up to 10 (4,000-gallon) truck trips per day, over a 5-day working week for the length of the construction schedule. It is estimated that each truck trip would average 26 miles roundtrip. Water requirements for the Project are shown in Table 2-4. A Water Supply Assessment was completed for the Project and is included as Appendix G.

Table 2-4. Water Requirements for Construction and Operation

Water Consumption Requirements	Approximate Consumption during Construction	Approximate Consumption during Operation
Daily (gallons per day)	622,625–877,166	N/A
Annual (acre-feet/year)	497–700	15–41

Assumes a 5-day working week, 260 working days per year.

Three temporary storage tanks would be used and staged around the site. The tanks would have a diameter of approximately 160 feet and be approximately 12 feet high. They would hold more than 5 acre-feet each. The use of temporary storage tanks rather than relying entirely on stand tanks and water trucks would reduce the amount of vehicle travel around the site by water trucks (and associated exhaust and dust), reduce the rate of groundwater extraction during construction, and also improve capability to respond quickly and effectively to mitigate fugitive dust emissions caused by unexpected high wind events.

Site Stabilization, Protection, and Reclamation

The Applicant would restore all temporarily disturbed areas to their preconstruction conditions, as required by the BLM and as detailed in a Decommissioning Plan. The Plan will describe the Applicant's strategy to minimize adverse effects of the Project on native vegetation, soils, and habitat, while recognizing that the mitigation for these impacts is the acquisition and long-term protection of off-site vegetation and habitat, or the restoration and enhancement of degraded BLM lands, or a combination of these two methods.

Transmission Line and Telecommunication Line Construction

The primary activities and areas of potential impact associated with the generation tie-line and telecommunication line construction will occur within access roads, at the transmission line structure locations, and at pull sites.

Surveying

Prior to construction, land survey work would be conducted to define the transmission line centerline, structure center hubs, ROW boundaries, and structure access roads for the generation tie-line.

Gen-Tie Line Access

Access to the ROW and transmission structure sites will be required during construction and for the ongoing maintenance of the generation tie line (gen-tie line). Existing paved and unpaved roads would be used to the extent practical, to transport material and equipment to and from the locations within the ROW.

A new access road parallel to the gen-tie line would be constructed using a bulldozer or grader (if required for safe access to a construction location), and a roller to compact and smooth the ground. Front-end loaders may be used to move soil locally or offsite. The generation tie-line road is proposed to be up to a 20' wide compacted soil road.

After project construction, the existing and the new permanent access road would be used by maintenance crews and vehicles for inspection and maintenance purposes.

All existing roads would be maintained after construction in at least the same condition as prior to the construction of the line. Culverts or other drainage structures would be installed only if necessary to move heavy equipment across drainages. Dust and erosion control measures required by the PSPP FEIS/RSA would be implemented along unpaved access routes and where the road surface sealants would be unsuitable for wildlife habitat.

The construction contractor selected to build the generation tie-line and install the communication cable will be required to prepare a specific Access Road Use Plan that will address use of the existing road network to transport workers, materials, and heavy equipment to the staging areas, structure locations, concrete batch plant sites, and material storage locations. The installation of culverts and other road improvement amenities would be reviewed and addressed on a site-by-site basis.

Transmission Structure Sites

Vegetation clearing and ground disturbance will be required at each structure site to construct tower footings, including excavation of foundation holes, installation of reinforcing steel, and pouring of concrete. Vegetation will not be cleared except where required to install the structure and structural foundations. Because of the generally flat topography along the proposed facility route construction pad grading at transmission structure locations may not be required at all locations.

Foundation excavation for transmission structures will be made using mechanized equipment. Each pole will require one hole, from 6 to 12 feet in diameter. Structure foundations will be

excavated with a vehicle-mounted power auger or a backhoe. In rocky areas, the foundation holes would be excavated by drilling.

Foundations would be installed by placing reinforced steel and transmission structure steel components into each foundation hole, positioning the steel components, and encasing them in concrete. Excess excavated spoil material would be used for fill where suitable. The foundation excavation and installation activities would require access to the site by a power auger or drill, a crane, material trucks, and ready-mix concrete trucks.

Water will be used for soil compaction and dust abatement at each structure site and along access roads. Water for footer compaction and dust abatement will be obtained from project onsite wells or offsite water sources and trucked to each construction location.

Structure Assembly and Erection

Transmission structure components and hardware would be taken to each structure site by truck. Steel structure sections would be delivered to structure locations where they would be fastened together to form a complete structure and hoisted into place by crane. A work area would also be required for each structure footing location, as well as for structure assembly and crane maneuvers. Concrete for use in constructing foundations would be dispensed from concrete mixer trucks. After construction, all disturbed areas at the structure site would be restored to natural contours and revegetated where required.

Pull Sites and Staging Areas

Construction of the gen-tie line would include staging/pulling areas for installation of conductors. The staging/pulling areas would be located within the gen-tie ROW and may be fenced for security, if temporary material storage is required. Temporary disturbance areas would be minimized to the maximum feasible extent, and there will be no blading at pull sites if the terrain is sufficiently level.

Conductor Installation

After the pole structures are erected, insulators, hardware, and stringing sheaves would be delivered to each structure site. The structures would be rigged with insulator strings and stringing sheaves at each ground wire and conductor position.

For public protection during wire installation, guard structures may be erected where the new line is adjacent to or crossing roads, existing power-lines, and other obstacles. Guard structures would consist of H-framed wood poles placed on either side of an obstacle and would prevent ground wires, conductors, or equipment from falling on an obstacle. The guard structures would be removed following conductor installation. Equipment for erecting guard structures would include augers, line trucks, pole trailers, and small cranes. Guard structures may not be required for small roads or other areas where suitable safety measures such as barriers, flagmen, or other traffic controls could be used.

Conductor installation begins with pilot lines being pulled from structure to structure and threaded through the stringing sheaves at each structure. Following the pilot lines, a larger diameter,

stronger line would be attached to conductors to pull them onto the structures. This process would be repeated until the ground wires or conductors are pulled through all sheaves.

The shield wire and conductors would be strung using powered pulling equipment at one end and powered braking or equipment tensioning at the other end of each conductor stringing segment. Sites for tensioning equipment and pulling equipment would be approximately 2 miles apart. This distance may be increased in certain locations by pulling in two sets of conductors back to back.

Tensioners, line trucks, wire trailers, and tractors needed for stringing and anchoring the ground wire or conductor would be necessary at each tensioning site. The tensioner, in concert with the puller, would maintain tension on the shield wires or conductors while they are pulled through the structures. The pulling site would require approximately half the area of the tension site. A puller, line trucks, and tractors needed for pulling and temporarily anchoring the shield wires, optical ground wire, and conductor would be necessary at each pulling site.

2.2.5 Operation and Maintenance Activities

EDF RE is an independent operator with experience operating and maintaining solar power facilities. Plant personnel would begin being hired 12 months prior to the scheduled start of commercial operation. The Project would employ up to 12 full-time staff during operation.

Operation Plan

The operation of the Palen Solar Project would comply with the Operation and Maintenance (O&M) Plan. It provides the overview for the operation and maintenance of the Project for the first twelve (12) months of commercial operation. This plan describes operation and maintenance areas and gives a brief overview of the other programs used to meet the Applicant objectives.

EDF RE may hire a separate firm as Project Operator. The Operator would operate and maintain the plant in accordance with approved procedures to comply with the issued environmental permits and appropriate governmental laws.

The Operator would either contract specific maintenance tasks or perform them using project staff as appropriate. The Operator would operate the Project and associated systems to ensure compliance with the emission limits for air and wastewater discharges in the project permits. In addition, the Operator would ensure that all hazardous waste on the site would be stored and disposed of properly. All environmental issues and associated permits would be the subject of continuing training and management emphasis. Willful violations of environmental laws could result in employee termination. At least annually, an internal assessment of environmental protection compliance would be made.

Maintenance Program

The Maintenance Program is conducted in accordance with the maintenance manual, vendor technical manuals, and engineering practices. Subject to scheduled overhauls, the nominal design life for the major components of the plant is 30 years. The Maintenance Program consists of:

- Routine Preventive Maintenance – normally conducted by the plant O&M staff, supported by outside contractors.

- Corrective Maintenance – normally conducted by the plant O&M staff, supported as necessary by outside contractors as required due to special equipment or expertise which is not cost-effective to maintain current on site (e.g., welding) or to augment efforts to return the plant to operation as soon as possible following a forced or unscheduled outage.

The Palen Solar Project components would be covered by warranties from its respective suppliers. All warranties would be tracked and compiled with and warranty claims would be made as directed by the Owner's Representative. The Operator would use a Computerized Maintenance Management Software (CMMS) package, vendor and contractor recommendations, and good engineering practices to plan and implement the component preventive maintenance program.

Scheduled maintenance periods would be planned and coordinated with SCE, which operates and maintains the local grid network. Unscheduled corrective maintenance would be determined on a case by case basis.

Maintenance service agreements are anticipated on the following areas, as appropriate:

- Predictive maintenance testing and analysis
- Safety valve setting, calibration and maintenance
- Testing and certification of fire protection system(s)
- Calibration services (beyond the cost-effectiveness of the plant's capability), such as:
  - High-voltage protective relay calibration
  - Safety relief valve calibration
  - Electricity flow metering calibration
- Environmental engineering services
- Consulting engineering services
- Plant security services
- Fire protection services
- Plant janitorial services
- Trash and waste material disposal (including potentially hazardous waste)
- Individual office equipment, such as fax, copies, computers, etc.
- Employee transportation (as required)

Other maintenance that would be performed in conjunction with the routine maintenance includes, but is not limited to:

- Torque electrical fittings
- Clean switch gear
- Calibrate protective relays
- Fire protection system test and annual certification
- Fuse swapping, testing ground fault detection and power quality

Vegetation Treatment

Some vegetation treatment would be required to keep the site free of noxious weeds. At a minimum, the access roads in the photovoltaic field would be maintained free of larger plants through

the use of targeted spraying, occasional scarifying, or weeding to reduce fire hazard, and allow access to the panel arrays. All chemicals used would be on the BLM approved list for California public lands. The Applicant would submit a Pesticide Use Proposal for each chemical used and obtain written approval from the Authorized Officer. All applicators of the chemicals used would have current up to date Certified Pesticide Applicator's License. The pesticide and herbicide applications would be submitted to the BLM Authorized Officer on an annual basis as required and would include the required information. Vehicles used for operation and maintenance would be cleaned to prevent weeds and other non-native plants from being brought onto the project site.

Roads would be maintained to minimize fugitive dust and prevent erosion from rain events. Additional gravel or surface treatments on the dirt access roads may be required to meet dust control requirements.

Operational Workforce and Equipment

Staffing

Up to 12 personnel would provide technical oversight or guidance in three areas: overall plant management, plant operation and maintenance, and human resources, accounting, and administration.

Security personnel would be on-call. The O&M building will house the security monitoring equipment, inclusive of security cameras feeds for monitoring the Project 24 hours per day.

Staff Training and Safety

On-going training would be provided to maintain operator qualifications and certifications. The Operator would ensure that its staff is fully trained on all health, safety and environmental issues in accordance with local and national regulations, with the following objectives:

- Maintain personnel safety – Zero accidents goal.
- Comply with all safety and environmental regulations, policies, and laws.
- Provide meaningful feedback to improve plant procedures and manuals on a continuing basis.

Plant casualty drills would be run on a periodic basis to evaluate the casualty training program. In addition, "Table Top" drill scenarios would be conducted on a monthly basis. These drills include both plant and hazardous material casualties. Mock emergency exercises would be conducted periodically in cooperation with the local fire and police departments in order to test Emergency Response Plan preparedness and to drill the plant employees in the proper execution of emergency roles and tasks.

Operational Equipment

Facilities would be maintained by 4 diesel engine pickup trucks. These would be used for accessing the site and delivering equipment and crews for maintenance activities. They would also be used for annual panel washing.

Operational Water Requirements and Sources

During operation, the Applicant estimates the panel arrays would be washed once annually to maintain the optimum generating efficiency. A high-pressure attachment to a small 4-wheel drive panel-washing vehicle would spray water on the panels. The quantity of water used would be between 15 and 41 acre-feet per year.

Permanent, above-ground water storage tanks would be used for O&M tasks and facilities, including on-site fire-fighting. Based on Riverside County Fire Department requirements, it is foreseen that up to two 10,000-gallon storage tanks would be placed just inside the entrance to the Project and at another strategic location within the project boundary for fire suppression purposes.

Domestic wastewater would be treated and disposed at the site using a septic disposal system consisting of septic tanks and leach field permitted by Riverside County Health District. The specifications for the septic system would be determined by engineering code and County permit requirements.

2.2.6 Closure, Decommissioning, Reclamation, and Restoration

The minimum expected operational lifetime of the Palen Solar Project is 30 years; however, depending on economic or other circumstances, the actual life of the Project could be longer or shorter.

In case of a temporary closure of the facilities, the BLM and any other responsible agencies would be notified. If temporary closure involves the threat of or actual release of hazardous substances, appropriate procedures in the Project's Hazardous Materials Business Plan would be implemented. Procedures would include but not be limited to the following:

- Practices to control any release of hazardous materials
- Applicable notifications of responsible agencies and the public
- Emergency response procedures

The Plan of Development (POD) includes a Closure, Decommissioning, and Reclamation Plan (see Appendix I of the Supplemental EIS/EIR Appendix H). When permanent closure is appropriate, this decommissioning plan would be updated if needed and submitted to the BLM for review and approval. Procedures would be designed to ensure public health and safety, environmental protection and compliance with all applicable laws, ordinances, regulations, and standards. Closure may range from short-duration closure to complete removal of equipment and restoration of the land to BLM-approved specifications. The procedures for decommissioning are designed to ensure public health and safety, environmental protection, and compliance with applicable regulations.

Prior to decommissioning, EDF would complete pre-decommissioning activities. These activities include removal of remaining residues and products, such as diesel fuel, gasoline, hydraulic oil, lubricated oil, mineral oils, and other materials (to the extent feasible) to reduce potential personnel and environmental exposure and to facilitate decommissioning. Hazardous material and con-

tainers would be rinsed clean, to the extent feasible, and the waste fluid collected for offsite disposal in compliance with federal, state, and local requirements and consistent with related project management plans. In general, the materials would be placed directly into tanker trucks operated by licensed waste haulers or other transport vessels and removed from the site at the point of generation to reduce the need for hazardous material and waste storage at the site. The Project would maintain electrical power, potable water, and sanitary services for use by decommissioning Project workers.

Decommissioning would generally include the following steps:

- Documentation and establishment of health and safety procedures.
- Conducting pre-decommissioning activities, including preparation of a final decommissioning and reclamation plan.
- Dismantling of equipment items that are to be sold on the used equipment market.
- Demolition of the aboveground structures (dismantling and removal of improvements and materials) in a phased approach while still using some items until final decommissioning; for instance, the water supply, administration building, and some electrical power components will be modified to continue use until very late in the decommissioning process.
- Demolition and removal of certain belowground facilities (floor slabs, footings), as needed.
- Disposal of hazardous materials, hazardous waste, and any contaminated soil to appropriate facilities for treatment/disposal or recycling.
- Module collection and recycling.
- Upon consultation with appropriate agencies, post-Project topography may be graded to match the natural gradient to the extent practical, and disturbance areas reclaimed to the extent practical. In these instances, proper topsoil management shall be conducted to ensure that all topsoil, to a minimum of 6 inches depth, is managed separately from deeper soil strata, and this topsoil shall be spread across the resulting surface of recontoured areas.

Although various types of decommissioning/demolition equipment will be utilized to dismantle each type of structure or piece of equipment on the Project site, decommissioning and dismantling will proceed according to the following general staging process:

- The first stage in the decommissioning process is to assess existing site conditions, survey the site grounds, and prepare the site for demolition.
- The second stage consists of dismantling and removal of aboveground structures as well as concrete flooring and structures.
- The third stage consists of certain belowground facility/utility removal (i.e., floor slabs, belowground walls, concrete, footings, septic tank, and leach field) conducted per agency coordination, consistent with applicable requirements.
- The fourth stage consists of excavation and potential removal of soils in disturbed areas, if necessary.

- The final stage consists of site contouring and reclamation of the Project site (per agency coordination and in accordance with requirements), to the extent feasible, while disturbing as little of the other site areas as feasible.

PV Equipment Removal and Recycling

After the facility has been disconnected from the utility power grid and all the electrical components have been disconnected within the facility, equipment would be dismantled and removed. Steps for removing the PV arrays and associated equipment include the following:

- Disconnect all wiring, cables, and electrical interconnections.
- Remove PV arrays from racks.
- Dismantle and remove all racks and extract all pile-drive support structures.

During decommissioning, Project components that are no longer needed would be removed from the site and recycled. The PV modules and supports would be removed. The demolition debris and removed equipment may be cut or dismantled into pieces that can be safely lifted or carried with the on-site equipment being used.

At the conclusion of operations, the wire, steel, and modules of which the system is comprised would be recycled to the extent feasible. All steel, copper, and aluminum will be recycled, and modules will be disassembled from steel racks and shipped back to the manufacturer for recycling.

Operation and Maintenance Building

If the O&M building is determined to be no longer useful for future land uses on the site, it would be decommissioned. The O&M building would be dismantled and recycled, the concrete dismantled to a minimum of 12 inches below grade; and the foundation and parking area would be broken up and removed from the site to an appropriately licensed disposal facility. The water storage tank, pumps, and related equipment would be removed and recycled to the extent practical.

On-Site Substation

At decommissioning, if the on-site substation is determined not to be utilized by a public or private utility, the prefabricated control house and electronic components of the substation equipment would be electrically disconnected and made safe for removal. The control house would then be disassembled and removed from the site. The transformers, breakers, buswork, and metal dead-end structures would be disassembled and removed. Concrete foundations and containment berms/curbs for the transformers would be broken up to a minimum of 12 inches below grade, and all debris and aggregate rock would be removed from the site.

Transformers using insulating oils would be removed from the site and recycled or disposed of at an appropriately licensed disposal facility. Site personnel involved in handling these materials would be trained appropriately and the Spill Containment and Counter Measures Plan would be updated for decommissioning.

Internal Power Collection System

The aboveground elements of the DC power collection system would be dismantled and removed. Underground elements would remain in place. All equipment and cabling that is removed would be recycled.

Gen-Tie Line

At the time of full Project decommissioning, if the gen-tie line would not be further used by the public or private utility or power generator, the line would be decommissioned. Decommissioning of the aboveground portion of the line consists of removal of the overhead conductors and removal of poles (risers). All steel would be recycled, and the foundations removed to a depth of at least 2 feet below the ground surface. Aluminum from overhead conductors would be recycled.

Roads

On-site roads would remain in place to accomplish decommissioning at the end of the facility's life. At the time of decommissioning, if the BLM determines that some of these roads would be beneficial for future use of the area, those roads may remain after decommissioning. Roads that would not be used will be removed, regraded (if necessary), and revegetated to reflect the adjacent, natural conditions. For the paved access road and parking area, pavement would be broken up and removed to an appropriate disposal site. The ground surface would be reclaimed and revegetated. In the interim, wherever possible, cut slopes, fill slopes, and borrow ditches along the access roads would be covered with topsoil and revegetated to reclaim habitat and to reduce soil erosion. Final reclamation may include recontouring the roads back to the original contour, seeding, and controlling noxious weeds, and may also include other techniques to improve reclamation success, such as ripping, scarifying, and replacing topsoil.

2.2.7 Applicant Proposed Measures Included in the Proposed Action

The Applicant has committed to measures that, when implemented as part of project construction or operation, would reduce or eliminate potential significant impacts. These are measure that the Applicant has committed to implementing are called Applicant Proposed Measures (APMs) and the impact analysis in Chapter 4 assumes that these measures will be fully implemented. The APMs would be included in the mitigation monitoring as they are assumed as means to reduce the effects of the project. The APMs were derived from the Conservation Management Actions included in the DRECP. These measures are presented below, and organized by their environmental discipline (so they are not necessarily in numerical order):

Biological Resources

- APM-1: Designated biologist(s) will conduct, and oversee where appropriate, activity-specific required biological monitoring during pre-construction, construction, and decommissioning to ensure that avoidance and minimization measures are appropriately implemented and are effective. The appropriate required monitoring will be determined during the environmental analysis and BLM approval process. The designated biologist(s) will submit monitoring reports directly to BLM.

- APM-2: All activities, as determined appropriate on an activity-by-activity basis, will implement a worker education program that meets the approval of the BLM. The program will be carried out during all phases of the Project (site mobilization, ground disturbance, grading, construction, operation, closure/decommissioning or project abandonment, and restoration/reclamation activities). The worker education program will provide interpretation for non-English speaking workers, and provide the same instruction for new workers prior to their working on site. As appropriate based on the activity, the program will contain information about:
  - Site-specific biological and nonbiological resources.
  - Information on the legal protection for protected resources and penalties for violation of federal and state laws and administrative sanctions for failure to comply with project-specific requirements intended to protect site-specific biological and nonbiological resources.
  - The required project-specific measures for avoiding and minimizing effects during all project phases, including but not limited to resource setbacks, trash, speed limits, etc.
  - Reporting requirements and measures to follow if protected resources are encountered, including potential work stoppage and requirements for notification of the designated biologist.
  - Measures that personnel can take to promote the conservation of biological and nonbiological resources.
- APM-3: All activities that are required to close and decommission the site (e.g., renewable energy activities) will specify and implement project-specific closure and decommissioning actions that meet the approval of BLM, and that at a minimum address the following:
  - Specifying and implementing the methods, timing (e.g., criteria for triggering closure and decommissioning actions), and criteria for success (including quantifiable and measurable criteria).
  - Recontouring of areas that were substantially altered from their original contour or gradient and installing erosion control measures in disturbed areas where potential for erosion exists.
  - Restoring vegetation as well as soil profiles and functions that will support and maintain native plant communities, associated carbon sequestration and nutrient cycling processes, and native wildlife species.
  - Vegetation restoration actions will identify and use native vegetation composition, native seed composition, and the diversity to values commensurate with the natural ecological setting and climate projections.
- APM-4: Consistent with BLM state and national policies and guidance, integrated weed management actions, will be carried out during all phases of activities, as appropriate, and at a minimum will include the following:
  - Thoroughly clean the tires and undercarriage of vehicles entering or reentering the project site to remove potential weeds.
  - Store project vehicles on site in designated areas to minimize the need for multiple washings whenever vehicles re-enter the project site.
  - Properly maintain vehicle wash and inspection stations to minimize the introduction of invasive weeds or subsidy of invasive weeds.

- Closely monitor the types of materials brought onto the site to avoid the introduction of invasive weeds and non-native species.
- Reestablish native vegetation quickly on disturbed sites.
- Monitor and quickly implement control measures to ensure early detection and eradication of weed invasions to avoid the spread of invasive weeds and non-native species on site and to adjacent off-site areas.
- Use certified weed-free mulch, straw, hay bales, or equivalent fabricated materials for installing sediment barriers.

■ APM-5: Implement the following measures for controlling nuisance animals and invasive species:

- No fumigant, treated bait, or other means of poisoning nuisance animals including rodenticides will be used in areas where Focus and BLM Special Status Species are known or suspected to occur.
- Manage the use of widely spread herbicides and do not apply herbicides effective against dicotyledonous plants within 1,000 feet from the edge of a 100-year floodplain, stream and wash channels, and riparian vegetation or to soils less than 25 feet from the edge of drains. Exceptions will be made when targeting the base and roots of invasive riparian species such as tamarisk and Arundo donax (giant reed). Manage herbicides consistent with the most current national and California BLM policies.
- Minimize herbicide, pesticide, and insecticide treatment in areas that have a high risk for groundwater contamination.
- Clean and dispose of pesticide containers and equipment following professional standards. Avoid use of pesticides and cleaning containers and equipment in or near surface or subsurface water.
- When near surface or subsurface water, restrict pesticide use to those products labeled safe for use in/near water and safe for aquatic species of animals and plants.

■ APM-6: For activities that may impact Focus or BLM Special Status Species, implement the following measures for noise:

- To the extent feasible, and determined necessary by BLM to protect Focus and BLM sensitive wildlife species, locate stationary noise sources that exceed background ambient noise levels away from known or likely locations of and BLM sensitive wildlife species and their suitable habitat.
- Implement engineering controls on stationary equipment, buildings, and work areas including sound-insulation and noise enclosures to reduce the average noise level, if the activity will contribute to noise levels above existing background ambient levels.
- Use noise controls on standard construction equipment including mufflers to reduce noise.

■ APM-7: Implement the following general standard practices to protect Focus and BLM Special Status Species:

- Feeding of wildlife, leaving of food or trash as an attractive nuisance to wildlife, collection of native plants, or harassing of wildlife on a site is prohibited.

- Any wildlife encountered during the course of an activity, including construction, operation, and decommissioning will be allowed to leave the area unharmed.
- Domestic pets are prohibited on sites. This prohibition does not apply to the use of domestic animals (e.g., dogs) that may be used to aid in official and approved monitoring procedures/ protocols, or service animals (dogs) under Title II and Title III of the American with Disabilities Act.
- All construction materials will be visually checked for the presence of wildlife prior to their movement or use. Any wildlife encountered during the course of these inspections will be allowed to leave the construction area unharmed.
- All steep-walled trenches or excavations used during the Project will be covered, except when being actively used, to prevent entrapment of wildlife. If trenches cannot be covered, they will be constructed with escape ramps, following up-to-date design standards to facilitate and allow wildlife to exit, or wildlife exclusion fencing will be installed around the trench(s) or excavation(s). Open trenches or other excavations will be inspected by a designated biologist immediately before backfilling, excavation, or other earthwork.
- Minimize natural vegetation removal through implementation of crush and drive or cut or mow vegetation rather than removing entirely.

■ APM-8: Use state-of-the-art, as approved by BLM, construction and installation techniques, appropriate for the specific activity/project and site, that minimize new site disturbance, soil erosion and deposition, soil compaction, disturbance to topography, and removal of vegetation.

■ APM-9: If suitable habitat characteristics are identified during the habitat assessment, clearance surveys for Mojave fringe-toed lizard will be performed in suitable habitat areas.

■ APM-10: In areas where protocol and clearance surveys are required, prior to construction or commencement of any long-term activity that is likely to adversely affect desert tortoises, desert tortoise exclusion fencing shall be installed around the perimeter of the activity footprint in accordance with the Desert Tortoise Field Manual (USFWS, 2009) or most up-to-date U.S. Fish and Wildlife Service (USFWS) protocol.

  Additionally, short-term desert tortoise exclusion fencing will be installed around short-term construction and/or activity areas (e.g., staging areas, storage yards, excavations, and linear facilities), as appropriate, per the Desert Tortoise Field Manual (USFWS, 2009) or most up-to-date USFWS protocol.

  - Exemption from desert tortoise protocol survey requirements can be obtained from BLM, in coordination with USFWS, and CDFW as applicable, on a case-by-case basis if a designated biologist determines the activity site does not contain the elements of desert tortoise habitat, is unviable for occupancy, or if baseline studies inferred absence during the current or previous active season.
  - Construction of desert tortoise exclusion fences will occur during the time of year when tortoise are less active in order to minimize impacts and to accommodate subsequent desert tortoise surveys. Any exemption or modification of desert tortoise exclusion fencing requirements will be based on the specifics of the activity and the site-specific population and habitat parameters. Sites with low population density and disturbed, fragmented, or poor habitat are

likely to be candidates for fencing requirement exemptions or modifications. Substitute measures, such as on-site biological monitors in the place of the fencing requirement, may be required, as appropriate.

- After an area is fenced, and until desert tortoises are removed, the designated biologist is responsible for ensuring that desert tortoises are not being exposed to extreme temperatures or predators as a result of their pacing the fence. Remedies may include the use of shelter sites placed along the fence, immediate translocation, removal to a secure holding area, or other means determined by the BLM, USFWS, and CDFW, as applicable.
- Modification or elimination of the above requirement may also be approved if the activity design will allow retention of desert tortoise habitat within the footprint. If such a modification is approved, modified protective measures may be required to minimize impacts to desert tortoises that may reside within the activity area.
- Immediately prior to desert tortoise exclusion fence construction, a designated biologist will conduct a clearance survey of the fence alignment to clear desert tortoises from the proposed fence line's path.
- All desert tortoise exclusion fencing will incorporate desert tortoise proof gates or other approved barriers to prevent access of desert tortoises to work sites through access road entry points.
- Following installation, long-term desert tortoise exclusion fencing will be inspected for damage quarterly and within 48 hours of a surface flow of water due to a rain event that may damage the fencing.
- All damage to long-term or short-term desert tortoise exclusion fencing will be immediately blocked to prevent desert tortoise access and repaired within 72 hours.

■ APM-11: Following the clearance surveys within sites that are fenced with long-term desert tortoise exclusion fencing a designated biologist will monitor initial clearing and grading activities to ensure that desert tortoises missed during the initial clearance survey are moved from harm's way.

A designated biologist will inspect construction pipes, culverts, or similar structures: (a) with a diameter greater than 3 inches, (b) stored for one or more nights, (c) less than 8 inches aboveground and (d) within desert tortoise habitat (such as, outside the long-term fenced area), before the materials are moved, buried, or capped.

As an alternative, such materials shall be capped before storing outside the fenced area or placing on pipe racks. Pipes stored within the long-term fenced area after completing desert tortoise clearance surveys will not require inspection.

■ APM-12: When working in areas where protocol or clearance surveys are required, biological monitoring will occur with any geotechnical boring or geotechnical boring vehicle movement to ensure no desert tortoises are killed or burrows are crushed.

■ APM-13: A designated biologist will accompany any geotechnical testing equipment to ensure no tortoises are killed and no burrows are crushed.

■ APM-14: Inspect the ground under the vehicle for the presence of desert tortoise any time a vehicle or construction equipment is parked in desert tortoise habitat outside of areas fenced

with desert tortoise exclusion fencing. If a desert tortoise is seen, it may move on its own. If it does not move within 15 minutes, a designated biologist may remove and relocate the animal to a safe location.

- APM-15: Vehicular traffic will not exceed 15 miles per hour within the areas not cleared by protocol level surveys where desert tortoise may be impacted.
- APM-16: If Bendire's thrasher is present, conduct appropriate activity-specific biological monitoring to ensure that Bendire's thrasher individuals are not directly affected by operations (i.e., mortality or injury, direct impacts on nest, eggs, or fledglings).
- APM-17: If burrows cannot be avoided on site, passive burrow exclusion by a designated biologist through the use of one-way doors will occur according to the most up-to-date BLM or CDFW specifications. Before exclusion, there must be verification that burrows are empty based on the most up-to-date BLM or CDFW protocols. Confirmation that the burrow is not currently supporting nesting or fledgling activities is required prior to any burrow exclusions or excavations.
- APM-18: Provide protection from loss and harassment of active golden eagle nests through the following actions:
  - Activities that may impact nesting golden eagles, will not be sited or constructed within 1-mile of any active or alternative golden eagle nest within an active golden eagle territory, as determined by BLM in coordination with USFWS as appropriate.
- APM-19: Provide specific golden eagle compensation in accordance with the most up to date BLM or USFWS policies, including applicable USFWS Eagle Conservation Plan Guidance.
- APM-20: Contribute to a golden eagle monitoring program, if the Project has been determined, through the environmental analysis, to likely impact golden eagles.
- APM-50: In assessing potential compensatory mitigation lands, the applicant would (APM 51) utilize a filtering criterion to determine in GIS where potential creosote rings may exist, with the goal of providing lands that have an equal or greater likelihood of creosote ring occurrence than the Project site. Use of this data would inform acquisition choices for mitigation lands.
- APM-51: All activities will follow applicable BLM state and national regulations and policies for salvage and transplant of cactus, yucca, other succulents, and BLM Sensitive plants.
- APM-52: The Project owner shall implement a bird and bat adaptive management program that includes potential measures the Project owner can implement to adaptively respond to detected mortality and injuries attributable to the Project. Adaptive actions undertaken will be discussed and evaluated in survey reports prepared under the Project's BBCS. Any impact reduction measures must be commensurate (in terms of factors that include geographic scope, costs, and scale of effort) with the level of avian or bat mortality or injury that is specifically and clearly attributable to the Project facilities, consistent with the nexus and proportionality requirements of California statutory and constitutional law and of U.S. constitutional law.
  a. *Performance Standards.* Appropriate performance standards for mitigation of impacts to any species regulated by BGEPA, ESA, and CESA exist through required consultation with USFWS and CDFW under their respective regulatory and permitting frameworks, as specified in Tier 1 Measures, below. For impacts to all other special status avian and bat species, adaptive management measures must reduce or offset mortalities caused by the Project to a

level that avoids a substantial, long-term reduction in the demographic viability of the population of the species in question, as estimated through implementation of the Project BBCS, which employs the structured approach set forth in the USFWS Land-Based Wind Energy Guidelines (USFWS, 2012).

b. Impact Reduction Measures.

i. Tier 1 Measures.

In addition to the monitoring requirements described in the Project BBCS, the following measures shall be implemented to achieve the above performance standards:

1) The Project owner shall immediately report and initiate consultation with USFWS and CDFW if there is a Project-attributed injury or mortality to any species regulated by BGEPA, or CESA. The BLM will confer with the USFWS if there is injury or mortality to any species listed under the ESA.

2) PSPP MM BIO-1: Designated Biologist Selection and Qualifications

3) PSPP MM BIO-2: Designated Biologist Duties

4) PSPP MM BIO-3: Biological Monitor Selection and Qualifications

5) PSPP MM BIO-4: Biological Monitor Duties

6) PSPP MM BIO-6: Worker Environmental Awareness Program (WEAP)

7) PSPP MM BIO-8: Impact Avoidance and Minimization Measures (e.g., 1. Limit disturbance areas; 2. Minimize road impacts; 3. Minimize traffic impacts; 4. Monitor during construction; 5. Minimize impacts of transmission/pipeline alignments, roads, and staging areas; 6. Avoid use of toxic substances; 7. Minimize lighting impacts; 8. Minimize noise impacts; 12. Minimize standing water; 13. Dispose of road-killed animals; 14. Minimize spills of hazardous materials; 15. Worker guidelines; 17. Monitor ground disturbing activities prior to pre-construction site mobilization; 18. Control unauthorized use of the project access roads; 20. Avoid spreading weeds)

8) PSPP MM BIO-12: Desert Tortoise Compensatory Mitigation

9) PSPP MM BIO-13: Raven Management Plan and Fee

10) PSPP MM BIO-14: Weed Management Plan

11) PSPP MM BIO-15: Pre-Construction Nest Surveys and Avoidance Measures

12) PSPP MM BIO-16: Avian Protection Plan

13) PSPP MM BIO-18: Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures

14) BIO-19: Special-Status Plant Impact Avoidance, Minimization and Compensation

15) PSPP MM BIO-21: Mitigation for Impacts to State Waters (e.g., 1. Acquire off-site state waters)

16) PSPP MM BIO-25: Golden Eagle Inventory and Monitoring

17) PSPP MM BIO-26: Evaporation Pond Netting and Monitoring
18) PSPP MM VIS-03: Temporary and Permanent Exterior Lighting (e.g., minimize visibility, minimize glare, minimize illumination)
19) PSPP MM VIS-04: Project Design (e.g., minimize the number of structures, reduce the amount of disturbed area)
20) APM-1: Designated Biologist
21) APM-2: Worker Education Program
22) APM-4: Integrated Weed Management Actions
23) APM-6: Noise Controls for Special-Status Species
24) APM-7: Standard Practices to Protect Special Status Species (e.g., prohibition of domestic pets)
25) APM-16: Bendire's Thrasher Monitoring
26) APM-17: Passive Burrow Exclusion
27) APM-18: Golden Eagle Nest Avoidance
28) APM-19: Golden Eagle Compensation
29) APM-20: Contribution to Golden Eagle Monitoring Program
30) APM-42: Manage Visual Resources as VRM Class IV
31) APM-45: Visual Design Standards
32) APM-46: Required Visual Resource BMPs

ii. Tier 2 Measures.

If Tier 1 measures do not achieve the performance standards described above, the monitoring results of the Project, as well as those of other PV projects and the results of their respective impact reduction efforts, will be analyzed to formulate additional impact reduction measures to achieve the performance standards. Such measures may include, but not be limited to:

1) Use of a secure cover or floating, high-density plastic balls to cover construction ponds, as recommended by the Federal Avian Administration's "Wildlife Hazard Management at Airports" manual.
2) Passive avian diverter installations along the perimeter or at other locations within the Project to reduce or minimize bird use of the site.
3) The use of sound, light or other means to discourage site use consistent with applicable legal requirements.
4) Onsite habitat management or prey control measures consistent with applicable legal requirements.
5) Modifications to support structures or other facilities to exclude nesting birds (e.g., netting or shielding around framework; capping open pipes or tubing).

iii. Tier 3 Measures.

In the event Tier 1 and Tier 2 avoidance and minimization measures do not meet the above performance standards, or upon election of the Project owner, the Project owner shall implement compensatory mitigation on terms and at ratios deemed appropriate by BLM, USFWS and/or CDFW to meet the performance standard applicable to the species in question. Such measures shall be approved by BLM, USFWS and/or CDFW and may include, but not be limited to:

1) Restoration of degraded off-site habitat with native vegetation.
2) Restoration of off-site agricultural fields to bird habitat.
3) Management of off-site agricultural fields to enhance bird populations.
4) Retrofitting of structures to minimize collisions.
5) Support for avian and bat research and/or management efforts conducted by entities approved by the USFWS and CDFW within the Project's mitigation lands or other approved locations.
6) Funding efforts to address avian diseases or depredation due to the expansion of predators in response to anthropomorphic subsidies that may adversely affect birds that use the mitigation lands or other approved locations.
7) Contributions to the Migratory Bird Conservation Fund managed by the Migratory Bird Conservation Commission.

Cultural Resources

- APM-21: Identify places of traditional cultural and religious importance to federally recognized Tribes and maintain access to these locations for traditional use.
- APM-22: Design activities to minimize impacts on cultural resources including places of traditional cultural and religious importance to federally recognized Tribes.
- APM-23: Develop partnerships to assist in the training of groups and individuals to participate in site stewardship programs.
- APM-24: Promote desert vegetation types/communities by avoiding them where possible, then use required compensatory mitigation, off-site mitigation, and other means to ensure Native American vegetation collection areas and practices are maintained.

Paleontological Resources

- APM-25: If not previously available, prepare paleontological sensitivity maps consistent with the Potential Fossil Yield Classification for activities prior to NEPA analysis.
- APM-26: Incorporate all guidance provided by the Paleontological Resources Protection Act.
- APM-27: Ensure proper data recovery of significant paleontological resources where adverse impacts cannot be avoided or otherwise mitigated.
- APM-28: Paleontological surveys and construction monitors are required for ground disturbing activities that require an EIS.

Soil and Water Resources

- APM-29: In addition to the applicable required governmental safeguards, implement up-to-date standard industry construction practices to prevent toxic substances from leaching into the soil.
- APM-30: Prepare an emergency response plan, approved by the BLM contaminant remediation specialist that ensures rapid response in the event of spills of toxic substances over soils.
- APM-31: Where possible, side casting shall be avoided where road construction requires cut-and-fill procedures.
- APM-32: All relevant requirements of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) will be complied with.
- APM-33: Surface water diversion for beneficial use will not occur absent a state water right.
- APM-34: The 100-year floodplain boundaries for any surface water feature in the vicinity of the Project will be identified. If maps are not available from the Federal Emergency Management Agency (FEMA), these boundaries will be determined via hydrologic modeling and analysis as part of the environmental review process.

  Construction within, or alteration of, 100-year floodplains will be avoided where possible, and permitted only when all required permits are obtained.
- APM-35: Water extracted or consumptively used for the construction, operation, maintenance, or remediation of the Project shall be solely for the beneficial use of the Project or its associated mitigation and remediation measures, as specified in approved plans and permits.
- APM-36: Water flow meters shall be installed on all extraction wells permitted by BLM.
- APM-37: Water-conservation measures shall be applied. These measures may include the use of specific technology, management practices, or both. Application of these measures shall be detailed in the Groundwater Water Monitoring and Mitigation Plan, which shall include a detailed discussion and analysis of the effectiveness of the specified water-conservation measures.
- APM-38: Activities shall comply with local requirements for any long-term or short-term domestic water use and wastewater treatment.
- APM-39: The siting, construction, operation, maintenance, remediation, and abandonment of all wells shall conform to specifications contained in the California Department of Water Resources Bulletins #74-81 and #74-90 and their updates.
- APM-40: Colorado River hydrologic basin – The concepts, principles and general methodology used in the Colorado River Accounting Surface Method, as defined in U.S. Geological Survey Scientific Investigations Report 2008-5113 (USGS, 2009); and existing and future updates or a similar methodology, are considered the best available data for assessing project-related groundwater impacts in the Colorado River hydrologic basin. The best available data and methodology shall be used to determine whether project-related pumping would result in the extracted water being replaced by water drawn from the Colorado River. If project-related groundwater pumping results in the static groundwater level at the well being near (within 1 foot), equal to, or below the Accounting Surface in a basin hydrologically connected to the Colorado River, that consumption shall be considered subject to the Law of the River (Colorado River Compact of 1922 and amendments). In such circumstances, the Applicant offset or otherwise mitigate the volume

of water causing drawdown below the Accounting Surface. Details of such measures and the right to the use of water shall be described in the Groundwater Water Monitoring and Mitigation Plan.

- APM-41: Environmental analysis for activities involving groundwater extraction that are in the vicinity of Joshua Tree National Park shall analyze and address any potential impacts of groundwater extraction on Joshua Tree National Park. The National Park Service shall be consulted on this process. The analysis or analyses shall include:
  - Potential impacts on the water balances of groundwater basins within these parks;
  - A map identifying all potentially impacted surface water resources in the vicinity of the Project, including a narrative discussion of the delineation methods used to discern those surface waters in the field;
  - Any project-related modifications to surface water resources, both temporary and permanent;
  - Analysis of any potential impacts on perennial streams, intermittent streams, and ephemeral drainages that could negatively impact natural riparian buffers;
  - Impacts of any project proposed truncation, realignment, channelization, lining, or filling of surface water resources that could change drainage patterns, reduce available riparian habitat, decrease water storage capacity, or increase water flow velocity or sediment deposition, in particular where stormwater diverted around or through the project site is returned to natural drainage systems downslope of the Project;
  - Any potential indirect project-related causes of hydrologic changes that could exacerbate flooding, erosion, scouring, or sedimentation in stream channels; and
  - Alternatives and measures proposed to reduce or eliminate such impacts.
- APM-49: All facility components that alter site hydrology will be designed to maintain continued aeolian sediment sorting and transport to downwind deposition zones, with designs subject to approval by BLM.

Visual Resources

- APM-42: Manage Visual Resources in accordance with Visual Resource Management (VRM) class IV.
- APM-47: Required Visual Resource BMPs. The Project will abide by the BMPs addressed in the most recent version of the document "Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands," or its replacement, including, but not limited to the following:
  - Color treat all solar facilities Shadow Gray from the BLM Environmental Color Chart CC001 unless a more effective color is selected by the Field Office VRM specialist.
  - Transmission:
    - Color-treat monopoles Shadow Gray per the BLM Environmental Color Chart CC001 unless a more effective color choice is selected by the local Field Office VRM specialist.
    - Lattice towers and conductors will have non-specular qualities.

  - o Lattice Towers will be located a minimum of 3/4 miles away from Key Observation Points such as roads, scenic overlooks, trails, campgrounds, navigable rivers and other areas people tend to congregate and located against a landscape backdrop when topography allows.
- Night Sky – BMPs to minimize impacts to night sky including light shielding will be employed.

Public Health and Safety

- APM-43: Implement the following standard practice for fire prevention/protection:
  - Implement site-specific fire prevention/protection actions particular to the construction and operation of the Project that include procedures for reducing fires while minimizing the necessary amount of vegetation clearing, fuel modification, and other construction-related activities. At a minimum these actions will include designating site fire coordinators, providing adequate fire suppression equipment (including in vehicles), and establishing emergency response information relevant to the construction site.

Comprehensive Trails and Travel Management

- APM-44: Avoid Tier 1, Tier 2, Tier 3 roads/primitive roads/trails, Backcountry Byways, and other significant linear features. If avoidance is not practicable, relocate access to the same or higher standard and maintain the recreation setting characteristics and access to recreation activities, facilities, and destination.
- APM-45: If residual impacts to Tier 1 and Tier 2 roads/primitive roads/trails, Backcountry Byways, or other significant linear features cannot be protected and maintained, commensurate compensation in the form of an enhanced recreation operations, recreation facilities or opportunities will be required.
- APM-46: The Project will incorporate visual design standards and include the best available, most recent BMPs, as determined by BLM.

Recreation / Transportation

- APM-48: For the designated vehicle routes directly impacted by activities (includes modification of existing route to accommodate industrial equipment, restricted access or full closure of designated route, pull outs, and staging areas to the public, etc.), mitigation will include the development of alternative routes to allow for continued vehicular access with proper signage, with a similar recreation experience. In addition, mitigation will also include the construction of an "OHV (off-highway vehicle) touring route" which circumvents the activity area and allows for interpretive signing materials to be placed at strategic locations along the new touring route, if determined to be appropriate by BLM.

2.2.8 CDCA Plan Amendment

As described in Section 1.5.3, the Palen PV proposal qualifies as a pending application subject to processing under the CDCA Plan in place prior to the adoption of the DRECP LUPA and Western Solar Plan. The prior CDCA Plan provisions, while recognizing the potential compatibility of solar generation facilities on public lands, require that all sites associated with power generation or transmission not specifically identified in the CDCA Plan be added to it through the land use plan amendment process.

The project site is located on Multiple-Use Class M lands within the CDCA,[4] but is not currently identified in the CDCA Plan for solar power generation. Public lands classified as Multiple-Use Class M (Moderate Use) are managed to provide a controlled balance between higher-intensity use and protection of public lands. Energy and utility development uses are allowed. Accordingly, no re-classification of the site is being considered. BLM's amendment, therefore, is only whether to amend the CDCA Plan to identify the Palen Solar Project site as suitable for solar energy generation, and to recognized construction of a high-voltage transmission line outside of a designated utility corridor.[5] This amendment will apply specifically to any ROW granted to the Palen Solar Project. In the event that the ROW is terminated, the land within the ROW area, and uses of that land, will be subject to the CDCA Plan, as amended by the DRECP, or subsequent amendments or revisions to the CDCA Plan.

Section 2.1 of the PSPP Final EIS (Proposed Land Use Plan Amendment Decisions and Alternatives), provides a further discussion of the planning criteria for considering an amendment to the CDCA Plan that are contained in CDCA Plan Chapter 4.10, *Land Use and Corridor Analysis*.

2.3 Alternative 1: Reduced Footprint Alternative

EDF RE designed the Reduced Footprint Alternative in response to a BLM request to develop an alternative layout that would avoid most direct effects to the large microphyll woodland and primary desert wash that crosses the Palen Solar Project site. The Reduced Footprint Alternative would be constructed within the same project boundaries as the Proposed Action but it would eliminate use of the central desert wash that crosses the project site from southwest to northeast, as illustrated in Figure 2-8 (Appendix A).

The Reduced Footprint Alternative would remain a 500 MW project, but its permanent disturbance would cover 3,100 acres (compared with 3,381 acres of disturbance for the Proposed Action). The alternative would divide the Project's solar arrays into two separate fields. The western field would be extended north, compared with the Proposed Action. The eastern field would be reconfigured to eliminate its original northeastern third, and would be shifted southward.

The other changes to the Proposed Action would be:

- Creation of a gap between the east and west solar array areas, of ranging from 1,750 feet to 2,300 feet. This gap area would be undisturbed by most construction activity although one or more roads connecting the two solar array areas would be required as well as entrances to each site.
- Each solar field would be fenced separately.

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4 The DRECP LUPA eliminated the Multiple Use Classes from the CDCA Plan. However, the Proposed Action and alternatives are analyzed using these classes because the Project is not subject to the decisions in the DRECP LUPA.

5 This CDCA Plan amendment was analyzed in the 2010 Draft EIS/CDCA Plan Amendment. Similarly, the 2013 Supplemental Draft EIS/CDCA Plan Amendment for the PSEGS project analyzed the necessary plan amendment with a slight modification for the gen-tie alignment. The current project footprint analyzed in this Supplemental Draft EIS falls within the footprint of the 2010 and 2013 Draft EISs. As explained in Section 1.7, in addition to supplementing the PSPP FEIS where supplementation is required, this Supplemental EIS/EIR summarizes and, where necessary, updates the environmental analysis in order to make this document more accessible. Therefore, discussion of the plan amendment is included in this EIS, despite it being analyzed in the 2011 PSPP Final EIS and the 2013 Supplemental Draft EIS.

Construction, operation and maintenance, and decommissioning activities would be the same as with the Proposed Action, described in Sections 2.2.4 through 2.2.6. The APMs presented in Section 2.2.7 would also be equally applicable to this alternative.

Under this alternative, the CDCA Plan would be amended would be amended to identify the Palen Solar Project site as suitable for solar energy generation, and would grant the Applicant permission to construct a high-voltage transmission line outside of a designated utility corridor.

2.4 Alternative 2: Avoidance Alternative

The Avoidance Alternative was developed by BLM in order to consider a further reduced project alternative shaped by the general application of recently developed Conservation and Management Actions (CMAs), which were developed as part of the DRECP LUPA planning process. The Avoidance Alternative would be constructed within the same boundary as the Proposed Action, but development would be limited to a much smaller area, based on the resource avoidance requirements defined in CMAs. The resulting developable area within the ROW boundary would be 1,620 acres (compared with 4,221 acres in the Proposed Action), as illustrated in Figure 2-9 (Appendix A). The generating capacity would be approximately 200 to 230 MW, compared with 500 MW in the Proposed Action and Alternative 1.[6]

As part of the DRECP planning process, the BLM, with partner agencies, developed the CMAs to identify a specific set of avoidance, minimization, and compensation measures, and allowable and non-allowable actions for siting, design, pre-construction, construction, maintenance, implementation, operation, and decommissioning activities on BLM-managed lands. These CMAs provide certainty on what avoidance and minimization measures, design features, and compensatory mitigation measures would be required for a particular action.

As described in Section 1.5.3, pursuant to Section II.3.2.4 of the DRECP LUPA, a project proposed in a SEZ that was considered a "pending project" under the Western Solar Plan,[7] would not be subject to the decisions in the DRECP LUPA. The initial project application was filed before June 30, 2009, the Project is located within a SEZ. In addition, the revisions contemplated by the PSP proposal either do not affect the project boundaries (e.g., proposed project, with technological change to PV, would still principally be within the PSPP ROW application boundary) or are related to avoiding resource or land use conflicts or adapting the Project to third-party-owned infrastructure constraints. Therefore, the PSP proposal is being processed under the CDCA land use plan decisions in place prior to the approval of the DRECP LUPA. Because the Proposed Action impacts resources that would be avoided under a project developed under the CDCA Plan, as amended by the DRECP, this alternative provides the opportunity to compare the efficacy of the Applicant Proposed Measures in the Proposed Action with the avoidance measures in the CMAs. Although BLM is not required to select an alternative fully compliant with the DRECP CMAs, those measures are within a reasonable range of alternatives.

As described in Section 2.2.7, the Proposed Action incorporates 52 Applicant Proposed Measures that were derived from the DRECP LUPA. The Avoidance Alternative incorporates all of those

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6 Assuming 7 acres per MW for solar PV projects as was done for the DRECP, 1,620 acres could generate approximately 230 MW. Given the lack of uniformity in the developable areas, it is likely that portions of it would not be built.

7 Applications filed prior to June 30, 2009 within the SEZs met this criterion.

CMAs, as well as additional CMAs that were not incorporated into the Proposed Action. The CMAs that apply only or completely to this alternative are presented below.

The first three CMAs are the primary ones that would restrict the project development area. The first CMA (LUPA-BIO-RIPWET-1, described below) was partially implemented in the Reduced Footprint Alternative, but is fully implemented for the Avoidance Alternative. Each CMA listed below is followed by a description of how the CMA affected the design of the Avoidance Alternative (see "Results of Implementation" for each CMA.

LUPA-BIO-RIPWET-1: The riparian and wetland DRECP vegetation types and other features will be avoided to the maximum extent practicable, except for allowable minor incursions with the specified setbacks. For the Sonoran-Coloradan Semi-Desert Wash Woodland/Scrub, the setback is 200 feet.

Results of Implementation: This CMA results in elimination of development in all desert dry wash woodlands plus a 200-foot setback.

LUPA-BIO-DUNE-2: Activities that potentially affect the amount of sand entering or transported within Aeolian sand transport corridors will be designed and operated to:

- Maintain the quality and function of Aeolian transport corridors and sand deposition zones, unless related to maintenance of existing facilities/operations/activities
- Avoid a reduction in sand-bearing sediments within the Aeolian system
- Minimize mortality to dune associated Focus and BLM Special Status Species

Results of Implementation: This CMA results in elimination of development on all sand transport corridors, eliminating 1,622 acres along the northeastern half of the Project. Portions of this CMA were incorporated into APM-49.

LUPA-BIO-DUNE-4: Dune formations and other sand accumulations (i.e., sand ramps, sand sheets) with suitable habitat characteristics for the Mojave fringe-toed lizard (i.e., unconsolidated blow-sand) will be mapped according to mapping standards established by the BLM National Operations Center.

For minor incursions into sand dunes and sand transport areas the activity will be sited in the mapped zone with the least impact to sand dunes and sand transport and Mojave fringe-toed lizards.

Results of Implementation: This CMA results in elimination of development on all sand transport corridors, eliminating 900 acres along the northeastern half of the Project.

In addition to the CMAs described above that would restrict the lands on which the Project could be built, the following additional CDCA Plan CMAs would require other protection for biological resources:

LUPA-BIO-SVF-3: Creosote bush rings larger than 5 meters in diameter (longest diameter if the "ring" forms an ellipse rather than a circle) shall be avoided.

Results of Implementation: EDF performed am aerial interpretation site inventory to identify creosote rings and estimate the diameter. There is one creosote ring with a diameter of 5 meters that potentially would need to be avoided as part of this CMA.

LUPA-BIO-VEG-1: Management of cactus, yucca, and other succulents will adhere to current up-to-date BLM policy.

Results of Implementation: This CMA would not change the Project as it requires adherence to existing policies that BLM could already enforce if appropriate.

LUPA-BIO-VEG-6: BLM may consider disposal of succulents through public sale, as per current up-to-date state and national policy.

Results of Implementation: This CMA would not change the Project as it requires adherence to existing policies that BLM could already enforce if appropriate.

LUPA-BIO-COMP-1: Impacts to biological resources, identified and analyzed in the activity specific environmental document, from activities in the LUPA Decision Area will be compensated using the standard biological resources compensation ratio, except for the biological resources and specific geographic locations listed as compensation ratio exceptions.

- Standard biological resources compensation ration = 1:1
- Desert tortoise designated critical habitat = 5:1
- Desert riparian woodland vegetation types = 5:1

Results of Implementation: Implementing the CMA would not affect compensation requirements for the alternative because desert riparian woodland vegetation types (as defined in the DRECP) were avoided by the alternative. As described in Table 4.17-1, the Proposed Action would impact 190 acres of desert dry wash woodland and the Reduced Footprint Alternative would impact 54 acres of desert dry wash woodland. The CMA would require an additional 380 acres of compensation for the Proposed Action and an additional 108 acres of compensation for the Reduced Footprint Alternative compared with the mitigation presented for the Project.

LUPA-BIO-COMP-2: Birds and Bats – The compensation for the mortality impacts to bird and bat Focus and BLM Special Status Species from activities will be determined based on monitoring of bird and bat mortality and a fee re-assessed every 5 years to fund compensatory mitigation. The initial compensation fee for bird and bat mortality impacts will be based on pre-project monitoring of bird use and estimated bird and bat species mortality from the activity.

Each activity, as determined appropriate by BLM in coordination with USFWS, and CDFW as applicable, will include a monitoring strategy to provide activity-specific information on mortality effects on birds and bats in order to determine the amount and type of compensation required to offset the effects of the activity.

Results of Implementation: The compensation requirements for morality to selected bird and bat species could result in increased compensation requirements for the Project, dependent on monitoring data to be obtained under the Avian Protection Plan.

LUPA-SW-17: An activity's groundwater extraction shall not contribute to exceeding the estimated perennial yield for the basin in which the extraction is taking place. Perennial yield is that quantity of groundwater that can be withdrawn from the groundwater basin without exceeding

the long-term recharge of the basin or unreasonably affecting the basin's physical, chemical, or biological integrity. It is further clarified arithmetically below.

Results of Implementation: A Water Supply Assessment has been completed for the Proposed Action, indicating that under normal conditions, the basin would accommodate the water needs of the project. The project water use is highest during the 30 months of construction and then reduces significantly for the majority of the life of the project. Mitigation measures would require extensive monitoring and reporting to ensure no localized or broader impacts to the groundwater basin including during drought conditions and any change in recharge in the basin over the life of the project. The MMs requirements satisfy the resource management goals of the DRECP.

LUPA-SW-23: Water Supply Assessment (WSA) (detailed requirements are presented in the CDCA Plan as amended by the DRECP LUPA).

Results of Implementation: A WSA was prepared for the Palen Solar Project following the CEQA Guidelines as required. However, the Water Supply Assessment required by the CDCA Plan, as amended by the DRECP has more detailed requirements, including groundwater modeling, estimates of the cone of depression considering cumulative drawdown, etc. This would provide a more comprehensive baseline for the Coachella Valley Groundwater Basin.

LUPA-SW-26: Groundwater pumping mitigation shall be imposed if groundwater monitoring data indicate impacts on water-dependent resources that exceed those anticipated and otherwise mitigated for in the NEPA analysis and ROD, even if the basin's perennial yield is not exceeded. Water-dependent resources include riparian or phreatophytic vegetation, springs, seeps, streams, and other approved domestic or industrial uses of groundwater. Mitigation measures may include changes to pumping rates, volume, or timing of water withdrawals; coordinating and scheduling groundwater pumping activities in conjunction with other users in the basin; acquisition of project water from outside the basin; and/or replenishing the groundwater resource over a reasonably short timeframe. For permitted activities, permittees may also be required to contribute funds to basin-wide groundwater monitoring networks in basins such as those encompassed by the East Riverside Development Focus Area (DFA) or in the Calvada Springs/South Pahrump Valley area, and to cooperate in the compilation and analysis of groundwater data.

Results of Implementation: Mitigation requires groundwater pumping monitoring and adjustments or compensation if the monitoring indicates this is necessary. This would be similar to CMA LUPA-SW-26. However, the CMA would potentially require a contribution to a basin-wide monitoring network that would further provide information regarding the Coachella Valley Groundwater Basin.

DFA-VRM-2: Regional mitigation for visual impacts is required in DFAs. Mitigation is based on the Visual Resource Inventory (VRI) class and the underlying visual values (scenic quality, sensitivity, and distance zone) for the activity area as it stands at the time the ROD was signed for the DRECP LUPA, September 14, 2016. Compensatory mitigation may take the form of reclamation of other BLM lands to maintain (neutral) or enhance (beneficial) visual values on VRI Class II and III lands. Other considerations may include acquisition of conservation easements to protect and

sustain visual quality within the viewshed of BLM lands. The following mitigation ratios will be applied in DFAs for VRI Class III lands: ½ (0.5):1 ratio.

Additional mitigation will be required where activities affect viewsheds of specially designated areas (e.g., National Scenic and Historic Trails).

> *Results of Implementation:* Any residual visual resources impacts of the alternative following implementation of the mitigation measures would be subject to the Conservation and Management Action compensation requirements spelled out in CMA DFA-VRM-2 (Regional mitigation for visual impacts is required in DFAs). DFA-VRM-2 outlines several types of potential compensation mitigation, but the selection and implementation of specific compensation would be established in future negotiations between the Applicant and BLM.

LUPA-CTTM-2: Avoid activities that would have a significant adverse impact on use and enjoyment within 0.5 miles from centerline of tier 2 Roads/Primitive Roads, and 300 feet from centerline of tier 3 primitive roads/trails. If avoidance of tier 2 and 3 roads, primitive roads and trails is not practicable, relocate access to the same or higher standard and maintain the setting characteristics and access to recreation activities, facilities, and destinations.

> *Results of Implementation:* This CMA would be applicable for the Project but the requirements for LUPA-CTTM-2 are the same for the Palen Solar Project as APM-44 so would be addressed under the APM.

Construction, operations and maintenance, and decommissioning activities for the Avoidance Alternative would be the same as with the Proposed Action, described in Sections 2.2.4 through 2.2.6. The measures defined in Section 2.2.7 would also be applicable to this alternative.

Under this alternative, the CDCA Plan would be amended to identify the Palen Solar Project site as suitable for solar energy generation, and would grant the Applicant permission to construct a high-voltage transmission line outside of a designated utility corridor.

2.5 No Action Alternative / No Project Alternative

Under the No Action Alternative and the CEQA No Project Alternative, the ROW application CACA-48810 would be denied and the ROW grant authorization would not be issued. The County would not act on the groundwater permit applications.

Additionally, under the No Action Alternative, the BLM would not amend the CDCA Plan to identify the site as suitable for solar development or recognize construction of a high-voltage transmission line outside of a designate utility corridor.

The BLM would continue to manage the land under the existing land use plan, the CDCA, as amended by the DRECP LUPA. The DRECP LUPA designated this area as a Development Focus Area, and the area would remain available for solar energy development. However, because the configuration, nature, location, resource intensiveness, and other factors related to any future solar energy project are unspecified and uncertain, the BLM cannot predict the environmental consequences that might result from such development, and so finds that particular impacts are too speculative to evaluate meaningfully in this Supplemental EIS/EIR.

2.6 Comparison of Alternatives and Impacts

Table 2-5 compares the major characteristics and impacts of the alternatives.

Table 2-5. Comparison of Palen Solar Project and Alternative

Alternative	Acres / MW	Impacts and Other Characteristics
Proposed Action	4,221 acres 500 MW	▪ Least efficient use of land (8.4 acres per MW) ▪ Solar photovoltaic panels
Alt 1: Reduced Footprint Alternative	3,100 acres 500 MW	▪ Avoidance of the central and largest desert wash ▪ Most efficient use of land (6.2 acres per MW) ▪ Solar photovoltaic panels
Alt 2: Avoidance Alternative	1620 acres 200 MW (with the possibility of up to 230 MW)	▪ Smallest footprint for development ▪ Solar photovoltaic panels
No Action / No Project Alternative	No disturbance No generation	▪ No construction or operational impacts ▪ No benefits from greenhouse gas (GHG) reduction

2.7 BLM's Agency Preferred Alternative

BLM has defined the Reduced Footprint Alternative as the Agency Preferred Alternative. This identification is based on BLM planning regulations (BLM Manual 1790-1, Ch. V(B)(4)(c)). The BLM will re-evaluate the preferred alternative following analysis of public comments on the Draft Supplemental EIS/EIR.

2.8 CEQA Environmentally Superior Alternative

CEQA Guidelines require that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the Proposed Action. If the environmentally superior alternative is the No Project Alternative, CEQA requires identification of an environmentally superior alternative among the other alternatives [CEQA Guidelines Section 15126.6(e)(2)]. As the lead agency, CEQA provides the County with the opportunity to select a project alternative rather than the proposed Project, particularly if the alternative will have significantly less physical environmental impacts than the Project. However, the lead agency under CEQA is not required to do so, especially when an alternative does not fulfill all of the stated Project objectives.

In the case of the Palen Solar Project, the No Project Alternative would have the least impacts overall. While another project may ultimately be developed on the Palen site, it is not now foreseeable, so the analysis assumes that the construction and operational impacts of the Proposed Action would not occur under the No Project Alternative. Given this determination, CEQA requires that the EIR identify the alternative with the next least severe impacts. This would be the Avoidance Alternative (Alternative 2), due to its substantially smaller size, which results in reduced ground disturbance and visual effects. However, it must be noted that the ground disturbance reduction of this smaller alternative would be offset by the additional electricity that would likely be generated using fossil fuels, reducing the potential to benefit the global greenhouse gas emissions situation.

2.9 Alternatives Considered but Not Analyzed in Detail

In accordance with 43 C.F.R. 2804.10, the BLM worked closely with the applicants during the pre-application phase of the PSPP and PSEGS proposals to identify appropriate areas for the projects BLM discouraged the applicants from including in its application locations with significant environmental concerns, such as critical habitat, Areas of Critical Environmental Concern (ACECs), Desert Wildlife Management Areas (DWMAs), designated OHV areas, wilderness study areas, and designated wilderness areas or other sensitive resources. BLM encouraged the applicants to locate its project on public land with the fewest potential conflicts. From this initial effort, many locations and forms of technology were considered but found not appropriate for further analysis within the corollary NEPA documents.

As this EIS/EIR presents the BLM and County's supplemental analysis to BLM's May 2011 Final EIS for the PSPP, the alternatives considered but not analyzed in detail from that previous analysis is summarized below, as well as any relevant additional considered-but-not-analyzed alternatives information from the PSEGS NEPA review. This discussion is presented in Section 2.9.1.

Section 2.9.2 describes the two solar technologies previously proposed at the Palen site (solar trough and solar power tower) and explains why they, much like PV in the prior NEPA documents, are now part of the alternatives category of considered but not analyzed.

To the extent not reconsidered through this Supplemental EIS/EIR, the following alternatives were, and remain, eliminated from detailed analysis because one or more of the following criteria from Section 6.6.3 of the BLM NEPA Handbook H-1790-1 apply:

1. It is ineffective (it would not respond to the BLM project purpose and need);
2. It is technologically or economically infeasible;
3. It is inconsistent with the basic policy objectives for the management of the area (e.g., does not conform to the CDCA Plan);
4. Its implementation is remote or speculative;
5. It is substantially similar in design to an alternative that is analyzed; and/or
6. It would have substantially similar effects to an alternative that is analyzed.

2.9.1 Alternatives Considered but Not Analyzed in Detail in Previous Palen Analyses

This section summarizes the alternative sites, alternative solar technologies, alternative renewable energy technologies, alternative methods of generation, and the alternative of energy conservation and demand management that were considered in the PSPP or PSEGS EIS.

PSPP Alternative Sites

In the PSPP EIS, the BLM considered, but did not fully analyze, five alternative sites because they would not avoid or substantially reduce the adverse impacts of the PSPP, because they would not

meet PSPP objectives or the BLM's purpose and need for the Project, or otherwise were not reasonable alternatives due to their comparable or greater impacts.

- **North of Desert Center Alternative.** This alternative was determined to be infeasible, as well as speculative, based on the number of private land owners whose agreement would be required and because it would have substantially similar effects to nearby natural resources as the PSPP.
- **Cibola Alternative.** This alternative was not considered further because the site was located on undisturbed private land that would require excessive grading, the impacts of which could be exacerbated by the presence of three large desert washes. Development of this site for a solar use would have caused comparable, or greater, impacts as the PSPP.
- **Palen Pass Alternative.** This alternative was not found to be a reasonable alternative for the PSPP because it was inconsistent with the BLM's purpose and need, which includes consideration of whether the proposal would comply with BLM mandates under the Federal Land Policy and Management Act of 1976 (FLPMA), BLM ROW regulations, and other applicable Federal laws since it was determined to be inconsistent with future expansion of the Joshua Tree National Park and/or the McCoy Wilderness in the area.
- **Desert Center Alternative.** This alternative was not considered further because it was considered speculative and infeasible based on the number of landowners whose agreement would be required and because it would have impacts equal to or greater than the other action alternatives for the PSPP with respect to the federally listed desert tortoise and other special status species. Furthermore, this alternative did not justify a change in BLM's prior practice of denying development ROWs for this area based upon the resources meant to be protected.
- **Palo Verde Mesa Alternative.** This alternative was not considered further because it was considered speculative and infeasible based on the number of landowners whose agreement would be required and because it would have substantially similar (or likely greater) effects than alternatives analyzed in detail in the PSPP.

Alternative Solar Technologies

The PSPP also screened and rejected five alternative solar technologies from detailed analysis since they were considered infeasible.

- **Stirling Dish Technology.** This alternative was eliminated because it could have increased the footprint of the PSPP between 10 and 45 percent. Furthermore, due to its greater height, it could have increased visual impacts and would not eliminate any of the significant impacts of the PSPP Proposed Action.
- **Solar Power Tower Technology.** This alternative was eliminated in the PSPP EIS and Staff Assessment because no substantial reduction in impacts would occur under this alternative technology. In addition, due to the extent of the facility and the height of the power towers, impacts to the Desert Center Airport were considered to potentially be greater for this alternative. The technology with related alternatives was reconsidered through the PSEGS project review as described in Section 2.9.2.
- **Linear Fresnel Technology.** This alternative was eliminated because it was considered to be infeasible. This technology is a proprietary technology owned by Ausra, Inc., which at the time had changed its focus to being a technology and equipment provider rather than an independent

power developer and owner. At nearly 2,500 acres for 500 MW, this technology would not eliminate the significant impacts of the PSPP proposed solar trough technology at this site.

- **Utility Scale Solar Photovoltaic (PV) Technology.** This alternative was eliminated in the PSPP EIS and Staff Assessment because it was found not to reduce the extent of land disturbance and access roads required, as well as the potentially more extensive grading and stormwater management systems required. This As the proposed technology through the current revised application, this technology is now under reconsideration as the Proposed Action, Alternative 1, and Alternative 2 in this Supplemental EIS/EIR.
- **Distributed Solar Technology.** This alternative was eliminated because it was considered that alternatives incorporating distributed generation with utility-scale generation, or looking exclusively at distributed generation, do not respond to the BLM's purpose and need for agency action in the PSPP PA/FEIS, which is focused on the siting and management of utility-scale solar energy development on public lands.

Alternative Renewable Energy Technologies

Consistent with BLM Instruction Memorandum 2011-53, the BLM typically does not analyze alternative technologies when a ROW application is submitted for a specific technology (e.g., evaluate a photovoltaic alternative for a concentrated solar power application) because such an alternative does not respond to the BLM's purpose and need to consider an application for the authorized use of public lands for a specific renewable energy technology. If, through discussions with the applicant, the BLM determines that the applicant has flexibility with respect to the proposed technology or is uncertain about a specific technology, it may be appropriate to fully analyze an alternative for a different technology. The following alternative renewable energy technologies were rejected:

- **Wind Energy Alternatives.** These alternatives were eliminated from detailed consideration in the PSPP because they would have not responded to the BLM's purpose and need for the PSPP, which was to respond to the PSPP applicant's application under Title V of FLPMA (43 USC 1761) for a ROW grant to construct, operate, and decommission a solar thermal facility on public lands in compliance with FLPMA, BLM ROW regulations, and other Federal applicable laws. In addition, wind-generated power was considered an infeasible alternative to the PSPP proposed action because it was not within the PSPP applicant's area of expertise and so may not be technically or economically feasible for the applicant to implement.
- **Geothermal Energy Alternatives.** These alternatives were eliminated from detailed consideration in the PSPP because they would not have responded to the BLM's purpose and need for the PSPP, which was to respond to an application to develop a solar facility; were considered an infeasible alternative to the action because it was not within the PSPP applicant's area of expertise and so may not be technically or economically feasible for the applicant to implement; and were considered remote or speculative since few new geothermal energy projects had been proposed during that time.
- **Biomass Alternatives.** These alternatives were eliminated from detailed consideration in the PSPP because they would not have responded to the BLM's purpose and need for the PSPP, which was to respond to an application to develop a solar facility; were considered an infeasible alternative to the action because it was not within the PSPP applicant's area of expertise and so

may not be technically or economically feasible for the applicant to implement; and were considered remote or speculative and therefore infeasible based on the number of new plants that would be required to generate an amount of electricity necessary to replace the PSPP.

- **Tidal Technology Alternatives.** These alternatives were eliminated from detailed consideration in the PSPP because they would not have responded to the BLM's purpose and need for the PSPP Action, which was to respond to an application to develop a solar facility; were considered an infeasible alternative to the action because it was not within the PSPP applicant's area of expertise and so may not be technically or economically feasible for the applicant to implement; and were considered to have environmental impacts that could be comparable or greater than the impacts of the alternatives analyzed in the PSPP.
- **Wave Power Alternatives.** These alternatives were eliminated from detailed consideration in the PSPP because they would not have responded to the BLM's purpose and need for the PSPP, which was to respond to an application to develop a solar facility, and were considered an infeasible alternative to the action because it was not within the PSPP applicant's area of expertise and so may not be technically or economically feasible for the applicant to implement.

Alternative Methods of Generating Electricity

The following alternative methods of generating or conserving electricity were considered as potential alternatives to the PSPP:

- Natural gas
- Coal
- Nuclear energy

These alternative methods of generating or conserving electricity were eliminated from detailed discussion because they would have been too great a departure from the application to be considered a modification of the PSPP applicant's proposal and so are infeasible under NEPA. These alternative methods would also have not responded to the BLM's purpose and need, which was to respond to an application for a solar facility. With the exception of nuclear, none of these addressed the BLM's public policy goals of increasing renewable energy on public lands, which was part of the purpose and need of the PSPP. Additionally, none of these alternative methods of generating electricity were within the PSPP applicant's area of expertise and so may not be technically or economically feasible for the applicant to implement. Moreover, coal-based power generation is discouraged (see Senate Bill 1368, Public Utilities Code § 8340 et seq.) and the permitting of new nuclear facilities in California is currently illegal, so these technologies also are eliminated as infeasible.

Conservation and Demand-Side Management

Conservation and demand-side management was eliminated from detailed discussion because it did not respond to the BLM's purpose and need for the PSPP PA/FEIS. In addition, it was eliminated because it was remote or speculative since it was considered that there was no evidence that conservation and demand-management alone would be sufficient to address all of California's energy needs. Furthermore, affecting consumer choice to the extent be necessary for a conservation and demand-side management solution was considered to be beyond the BLM's or the PSPP applicant's control.

2.9.2 Previously Analyzed Solar Projects

The PSPP solar trough and PSEGS solar power tower projects that were the subject of previous CEQA and NEPA analyses are no longer being considered as alternatives in this supplemental document.

These technologies are eliminated from consideration because the solar thermal technologies have the potential for more severe impacts than the solar photovoltaic technology. These impacts include more dramatic degradation of visual resources (due to use of mirrors and power towers), more extensive industrial construction for the turbines and power blocks, and use of potentially hazardous heat transfer fluids. The greater visibility of the solar thermal technologies also created more severe concern from Native American tribes, due to the value of the landscapes in the region.

Following are descriptions of these two solar thermal technologies.

PSPP Proposed Project: Solar Trough Technology

The solar trough project proposed as the PSPP would have used solar parabolic trough technology, in which arrays of 30-foot-tall parabolic mirrors would collect heat energy from the sun and refocus the radiation on a receiver tube. Within the tube would be a heat transfer fluid, which would be piped through a series of heat exchangers where it would release the heat to generate high pressure steam. The steam would be fed into a steam turbine generator to produce electricity.

The PSPP was to include two separate power blocks, each with a steam generation heat exchanger, an auxiliary boiler, a steam turbine generator, air cooled condensers, a wet cooling tower for ancillary equipment, a water filter system and clarifier system, a reverse osmosis reject water tank, evaporation waste stream ponds, water and HTF pipelines, and a propane storage tank.

The disturbance area for the PSPP would have been 3,100 acres within a fenced area of just under 4,000 acres. Parabolic troughs must be almost level along the length of each row, and grades perpendicular to the troughs are generally at 2 percent or less. Therefore, most of the site would have been graded nearly level and scraped free of vegetation.

The solar trough project was to include engineered drainage channels along the project boundary. The channels would intercept offsite flows and convey them around and through the site for discharge along the northern project boundary. Construction water use for the PSPP was estimated at 5,750 acre-feet total for the duration of construction. The average water use during operations would be 150 acre-feet per year (afy) per unit for a total of 300 afy. There would be two major covered water tanks.

Construction would occur over 39 months with an average workforce of 566 employees and a peak workforce of 1,140 employees. Operational employment would be 134 employees. The detailed description of the proposed PSPP was presented in Section 2.2 of the PSPP PA/FEIS (BLM, 2011).

PSEGS Proposed Project: Solar Power Tower Technology

The PSEGS project was to be constructed across over 3,500 acres and contain approximately 85,000 heliostats[8] for each of two solar fields. Each of the heliostat assemblies would be composed of two mirrors, each approximately 12 feet high by 8.5 feet wide. Perimeter fencing would be 7 feet high.

A power block with a steam turbine generator would be located in the center of each of two solar fields. In the center of each field there would be a solid concrete solar power tower supporting the solar receiver steam generator, one steam turbine generator, and supporting auxiliary equipment including a dry cooling system, transformer, emergency diesel generators, and natural gas auxiliary boilers. The height of each power tower would be 750 feet, topped by a lightning rod approximately 10 feet tall and Federal Aviation Administration-required lighting.

Similar to the solar trough, each power block would include two natural gas-fired boilers to assist with daily start-up of the power generation equipment and to preserve energy in the steam cycle overnight. PSEGS would use a dry-cooling system with a 120-foot tall air-cooled condenser unit for each power tower structure.

Heliostat installation would maintain natural land contours to ensure that the PSEGS to avoid significantly affecting surface drainage patterns or storm runoff. PSEGS would maintain sheet flow. Vegetation in the solar field would be mowed to a height of 12 to 18 inches and be subject to invasive plant and weed management measures.

Each power block would require a wastewater system with a 2-acre evaporation pond. The wastewater from each power block would be transported to the evaporation ponds by truck. Each plant would have an onsite wastewater treatment system consisting of thermal evaporation with mechanical vapor compression to concentrate the wastes prior to final disposal in the evaporation ponds.

The construction of the solar power towers would take 34 months. There would be an average of 998 daily construction workers with a peak of 2,300 daily workers. Operation would require up to 100 full-time employees.

Alternative Tower Heights. Taller power towers allow solar generation to extend over a larger amount of time in each day. At the same time, a taller tower requires less ground surface to be covered by heliostats. A taller power tower alternative to the PSEGS proposal would have resulted in fewer impacts on ground-based environmental resources because it would have required less land to generate the same amount of power. Despite the potential loss of generating efficiency, a shorter tower would have reduced effects on visual and Native American resources, with its smaller viewshed.

Alternative Number of Towers. The number of power towers constructed affect the extent of ground-disturbing and visual impacts. PSEGS was proposed as a two-tower project. A single tower design was not considered a viable alternative to the PSEGS; the economics and engineering for a single 500 MW tower was considered to be prohibitive for the PSEGS.

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[8] A heliostat is a flat mirror on a rotating base that allows it to reflect sunlight onto the power tower's boiler as the sun moves throughout the day.

Chapter 3

Affected Environment

CHAPTER 3
Affected Environment

3.1 Introduction

This chapter describes existing conditions for Bureau of Land Management (BLM) resource programs, resource uses, special designations, and the social and economic environment on or near the Palen Solar Project site. The description of the affected environment uses the best and most recent data available, including the data made available by the Desert Renewable Energy Conservation Plan EIS. This affected environment discussion serves also as the CEQA environmental baseline.

By describing existing conditions for resources on or near the Palen site, this chapter serves as the baseline against which Chapter 4 analyzes potential impacts of the alternatives. In addition to describing existing conditions, this chapter identifies management challenges, where appropriate.

The Palen Solar Project site is located in the California inland desert, approximately 0.5 miles north of U.S. Interstate-10 (I-10), approximately 35 miles west of Blythe and 10 miles east of Desert Center, in an unincorporated area of Riverside County, California, as shown on Figure 1-1, Regional Context (Appendix A). The Project would include a 500 MW solar PV generating facility and a single-circuit 230 kV overhead transmission (gen-tie) line that would interconnect with the existing Southern California Edison (SCE) Red Bluff Substation.

3.1.1 Resources Not Considered

This chapter presents a description of the environment and social settings for all potentially affected resources. This chapter does not provide detail about environmental resources that would not be affected by the Palen Solar Project or that are not present within the project vicinity. These include the resources listed below, each with an explanation for why they are not evaluated.

- **Cooperative Management and Protection Areas:** There are no Cooperative Management and Protection Areas in the project area.
- **Back Country Byways:** There are no designated Back Country Byways that would be affected by the Project.
- **Forest Reserves:** There are no Forest Reserves on or near the project site.
- **Livestock Grazing:** There are no livestock grazing leases on or near the project site.
- **National Monuments:** There are no National Monuments on or near the project site. The 2016-designated Mojave Trails National Monument is about 25 miles north of the Palen site.

- **Wild Horses and Burros:** There are no Wild Horses and Burros Management Areas near the project site.
- **Wild and Scenic Rivers:** There are no Wild and Scenic Rivers near the project site.

The Palen Solar Power Project PA/EIS (2011) identified environmental justice, recreation, and wetlands as resources not affected by then Proposed Action (at that time a solar trough project). However, this Supplemental Draft EIS/EIR does include those three resource areas because they have the potential to be affected by the Palen Solar Project. Wetlands are address under Vegetation Resources (Section 3.17).

3.1.2 Environmental Documents Used

As described in Chapter 1, this Supplemental EIS/EIR relies on environmental documents analyzing solar projects at the Palen site. These documents were published for the two previous solar technologies that were proposed by different developers, and analyzed by the BLM and the California Energy Commission (CEC). The referenced documents include the following:

- Revised Staff Assessment (RSA) for Palen Solar Power Project (PSPP – solar trough). California Energy Commission (CEC); September 2010 (CEQA only)
- Plan Amendment / Final EIS (PA/FEIS) for Palen Solar Energy Project (PSPP – solar trough). BLM; May 2011 (NEPA only)
- Draft Supplemental EIS (DSEIS), Palen Solar Electric Generating Station (PSEGS – solar power tower). BLM; July 2013 (NEPA only)
- Final Staff Assessment (FSA) for Palen Solar Electric Generating Station (PSEGS – solar power tower). CEC; September 2013 (CEQA only).

These documents are incorporated by reference into this Supplemental EIS/EIR, as encouraged in both NEPA and CEQA. However, to be clear about the differences from previous analyses to the current project, each section of Chapter 3 begins with a description of the portions of these previous documents that are used to support the new analysis. To reduce the need for cross-referencing the previous documents, each section presents or summarizes the relevant baseline information. The information presented in the previous documents is repeated or summarized where appropriate. Where baseline information changed since 2013, affecting the impact analysis, this Supplemental EIS/EIR has been updated with new information.

3.2 Air Resources

The previous analyses of impacts on air quality for the previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Amendment (RSA) for the PSPP, Section C.1, Air Quality.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.2, Air Quality.

The affected environment and regulatory information presented in this section relies on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated National Ambient Air Quality Standards, air quality deterioration limits, and regional climate information. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

3.2.1 Regulatory Framework

Air Quality Planning Programs

Since 1970, the federal Clean Air Act (CAA) has required each state to identify areas that have ambient air quality in violation of federal standards. States are required to develop, adopt, and implement a State Implementation Plan (SIP) to achieve, maintain, and enforce federal ambient air quality standards in these nonattainment areas. The SIP process includes specific deadlines for achieving the federal ambient air quality standard once a nonattainment designation has been made. Deadlines for achieving the federal air quality standards vary according to air pollutant and the severity of existing air quality problems. The SIP must be submitted to and approved by the U.S. Environmental Protection Agency (EPA). SIP elements are developed on a pollutant-by-pollutant basis whenever one or more air quality standard is being violated. Development of SIP documents is formally the responsibility of the relevant state air quality management agency, and in California, local/regional air quality management agencies and local/regional transportation planning agencies assume the primary responsibility for SIP document preparation.

The status of areas with respect to each federal ambient air quality standard is typically categorized as nonattainment (in violation of a national standard), attainment (in compliance with a national standard), or unclassifiable. For most air pollutants, initial federal status designations are made using only two categories: nonattainment or unclassifiable/attainment. The unclassified designation includes attainment areas as well as areas that are expected to attain the standards although monitoring data are lacking. Areas that have been reclassified from nonattainment to attainment are automatically considered "maintenance areas."

The California Clean Air Act of 1988 created a state air quality planning program similar to the federal SIP process for areas that violate state ambient air quality standards. The California Air Resources Board (CARB) designates areas as attainment, nonattainment, or unclassified with respect to each of the state ambient air quality standards. Local air quality management agencies, in consultation with the relevant council of governments, are responsible for preparing and updating state air quality management plans for pollutants other than particulate matter. CARB is responsible for air quality planning efforts addressing the state ambient air quality standards for

particulate matter (PM10 and PM2.5). The state air quality planning process differs from the federal SIP process in one respect: while there are requirements to show on-going improvement in air quality, there are no specific deadlines for achieving state air quality standards.

The geographic basis for attainment status designations varies and can be based on political boundaries; metropolitan statistical area boundaries; areas defined by township and range; areas defined by highways or topographic features; or areas defined by a combination of these types of boundaries. The largest geographic units used for attainment status designations are called air quality control regions (EPA terminology) or air basins (CARB terminology). Air quality control regions and air basins are typically defined by a combination of political boundaries (often county boundaries) and topographic features that influence meteorological conditions and pollutant transport.

Riverside County has adopted an air quality element in the County General Plan (2015). The air quality element includes policies supporting regional cooperation with other jurisdictions to improve air quality; requiring compliance with federal, state, and regional air quality regulations; encouraging programs to reduce vehicle miles traveled; encouraging energy conservation in urban land uses; and encouraging development patterns that improve the County's jobs/housing balance.

Air Quality Standards

The federal CAA and the California CAA both require the establishment of standards for ambient concentrations of criteria air pollutants for ozone, NO_2, CO, sulfur dioxide (SO_2), particulate matter (i.e., PM10, PM2.5), and lead, called Ambient Air Quality Standards (AAQS). These pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria. The state standards, established by CARB, typically are more protective than the federal standards, which are established by the EPA. The times over which the various air quality standards are measured range from one hour to an annual average. The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per a volume of air, in milligrams or micrograms of pollutant in a cubic meter of air (mg/m^3 or $\mu g/m^3$, respectively).

As mentioned in the Palen Solar Electric Generating System (PSEGS) Supplemental EIS (2013) and Staff Assessment (2014), since publication of the PSPP PA/FEIS and RSA, the U.S. EPA strengthened the annual National AAQS for PM2.5 from 15.0 micrograms per cubic meter ($\mu g/m^3$) to 12.0 $\mu g/m^3$ (EPA, 2016). In addition, in 2015, the EPA revised the 8-hour ozone standard from 0.075ppm to 0.070 ppm (EPA, 2016). The current federal and state air quality standards are listed in Table 3.2-1.

Table 3.2-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	National Standard	California Standard
Ozone (O_3)	8-hour	0.070 ppm (137 $\mu g/m^3$)	0.070 ppm (137 $\mu g/m^3$)
	1-hour	—	0.09 ppm (180 $\mu g/m^3$)
Carbon Monoxide (CO)	8-hour	9 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1-hour	35 ppm (40 mg/m^3)	20 ppm (23 mg/m^3)
Nitrogen Dioxide (NO_2)	Annual	0.053 ppm (100 $\mu g/m^3$)	0.030 ppm (57 $\mu g/m^3$)
	1-hour	0.100 ppm	0.18 ppm (339 $\mu g/m^3$)

Table 3.2-1. National and California Ambient Air Quality Standards

Pollutant	Averaging Time	National Standard	California Standard
Sulfur Dioxide (SO_2)	Annual	0.030 ppm (80 µg/m³)	—
	24-hour	0.14 ppm (365 µg/m³)	0.04 ppm (105 µg/m³)
	1-hour	0.075 ppm (195 µg/m³)	0.25 ppm (655 µg/m³)
Particulate Matter (PM10)	Annual	—	20 µg/m³
	24-hour	150 µg/m³	50 µg/m³
Fine particulate matter (PM2.5)	Annual	12 µg/m³	12 µg/m³
	24-hour	35 µg/m³	—

Source: CARB 2016.
ppm = parts per million; µg/m³ = micrograms per cubic meter; "—" = no standard.

In California, air quality regulation is a joint responsibility between CARB and local air quality management agencies. Local agencies are either a single county or a multi-county agency, typically called an Air Pollution Control District (APCD) or an Air Quality Management District (AQMD). APCDs and AQMDs have primary responsibility for most air quality regulatory programs, with CARB retaining oversight responsibilities. CARB directly implements statewide regulatory programs for motor vehicles, portable equipment, and HAPs.

The project site is located in the Mojave Desert Air Basin (MDAB) which includes portions of Kern, Los Angeles, San Bernardino, and Riverside Counties. The MDAB spans the jurisdiction of four different local air districts, including the Kern County Air Pollution Control District, the Antelope Valley AQMD, the Mojave Desert AQMD, and a portion of the South Coast AQMD (SCAQMD). The Project is under the jurisdiction of the SCAQMD. The SCAQMD has a number of rules presented in Table 3.2-2 that govern the management of projects in this area.

Table 3.2-2. SCAQMD Rules

Applicable Rules	Description
Rules 201, 203, and 212 – Permit to Construct; Permit to Operate; and Standards for Approving Permits and Issuing Public Notice	Establishes the requirements to obtain a Permit to Construct and Permit to Operate for emission sources.
Rule 401 – Visible Emissions	Limits visible emissions.
Rule 402 – Nuisance	Prohibits the discharge of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to the public or which endanger the comfort, response, health or safety of the public or which cause injury or damage to business or property.
Rule 403 – Fugitive Dust	Limits fugitive emissions from certain bulk storage, earthmoving, construction and demolition, and manmade conditions that may cause wind erosion.
Rule 404 – Particulate Matter Concentration	The rule limits particulate matter emissions as a function of the exhaust flow rate from the regulated device.
Rule 409 – Combustion Contaminants	Limits combustion contaminant discharge into the atmosphere from fuel burning equipment to 0.1 grain or less per cubic foot of gas calculated to 12% of carbon dioxide (CO_2) at standard conditions.
Rule 431.1 – Sulfur Compounds of Gaseous Fuels	Limits discharge into the atmosphere of sulfur compounds from the burning of gaseous fuels.
Rule 431.2 – Sulfur Compounds of Liquid Fuels	Limits discharge into the atmosphere of sulfur compounds from the burning of liquid fuels.

Table 3.2-2. SCAQMD Rules

Applicable Rules	Description
Rule 463 – Organic Liquids Storage	Sets standards for storage of organic liquids with a true vapor pressure of 0.5 pounds per square inch or greater.
Rule 474–Fuel Burning Equipment–Oxides of Nitrogen	Limits the discharge of NO_2 to the atmosphere to the concentrations specified in the rule.
Regulation IX – New Source Performance Standard	Incorporates the Federal New Source Protection Standards (Title 40 Code of Federal Regulations 60) rules by reference.
Rule 1110.2 – Emissions from Gaseous and Liquid-Fueled Internal Combustion Engines	The purpose of this rule is to reduce NOx, VOCs, and CO from engines.
Rule 1146 – Emissions of Oxides of Nitrogen from Industrial, Institutional and Commercial Boilers, Steam Generators and Process Heaters	This rule limits NOx emissions from boilers, steam generators, and process heaters.
Rule 1166 – Volatile Organic Compound (VOC) Emissions from Decontamination of Soil	Establishes requirements to control VOC emissions from handling of VOC-contaminated soil.
Regulation XIII – New Source Review	Establishes the pre-construction review requirements, including Best Available Control Technology and emission offset requirements for new, modified or relocated facilities to ensure that these facilities do not interfere with progress in attainment of the national ambient air quality standards.

Source: CEC, 2010.

Visibility and Federal Class I Areas

The federal CAA requires U.S. EPA to administer programs so that all areas of the country achieve the federal ambient air quality standards within various specified time frames. For attainment areas that already meet the federal ambient air quality standards, the federal Prevention of Significant Deterioration (PSD) permit program includes a three-tier classification defining the extent to which baseline air quality conditions can be degraded. Class I areas have the smallest allowable air quality deterioration limits. Class II areas allow greater deterioration of air quality but must maintain air quality conditions better than the federal air quality standards. Class III areas allow deterioration of air quality to the level of the federal ambient air quality standards.

The Class I area closest to the project site is the Joshua Tree National Park (JTNP), approximately 7 miles north of the project boundary. Visibility is considered an important air quality value to be protected within JTNP. There are no other Class I areas within 62 miles (100 kilometers) of the Project. Data from the Federal Land Manager Environmental Database (CIRA, 2016) indicate that visibility in the JTNP Class I area has been improving since 2001. For JTNP and other Class I areas in southern California, the Western Regional Air Partnership shows that the visual range has improved more than 20 percent in the most recent years (2010-2014) when compared to the baseline (2000-2004), and that this improvement is largely due to the local authorities having the ability to control anthropogenic emissions (WRAP, 2016).

3.2.2 Existing Conditions

Meteorological Conditions

The Proposed Action is within the MDAB. Relatively high daytime temperatures; large variations in relative humidity; large and rapid diurnal temperature changes; occasional high winds; and sand, dust, and thunderstorms characterize the climate. The aridity of the region is influenced by a sub-tropical high-pressure system typically off the coast of California and topographical barriers that effectively block the flow of moisture to the region. The Colorado Desert experiences two rainy seasons per year. The first occurs during the winter; the second is the summer monsoon.

The region experiences a wide range in temperature, with very hot summer months with an average maximum temperature of 108 degrees Fahrenheit (°F) in July and cool dry winters with an average maximum temperature of 66.7 °F in December. The Blythe area receives approximately 3.5 inches of rainfall per year. The majority of the rainfall occurs during the winter months, but rainfall during the late summer is not uncommon. The summer rainfall events tend to be a result of tropical storms that have a short duration and a higher intensity than the winter rains. Annual average precipitation ranges from 0.02 to 0.48 inches per month (WRCC, 2016).

A wind rose from Blythe Airport for the years 2003 to 2007 indicates the highest annual wind direction frequencies are from the south through the southwest. Calm conditions occur approximately 17% of the time, with the annual average wind speed approximately 8.5 miles per hour (mph) (BLM, 2011 and CEC, 2010).

Sensitive Receptors

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses. The Eagle Mountain School is approximately 16 miles northwest of the Proposed Action. One residence is located approximately 25 feet from the northwest corner of the proposed Palen Solar Project fenceline. Another residence is located approximately 3,500 feet northwest of the project site boundary. Both these residences are located within an existing date palm orchard.

Existing Ambient Air Quality

The Riverside County portion of the MDAB is designated as nonattainment for the state ozone and PM10 standards. This area is designated as attainment or unclassifiable for all federal criteria pollutant ambient air quality standards and the state CO, NO_2, SO_2, and particulate matter less than 2.5 micrometers in diameter (PM2.5) standards. Table 3.2-3 summarizes the site area's attainment status for various applicable federal and state standards.

Table 3.2-3. Attainment Designations in the Mojave Desert Air Basin Portion of Riverside County

Pollutant	Federal Designation	State Designation
Ozone	Attainment	Nonattainment
Carbon Monoxide	Unclassifiable/Attainment	Unclassifiable/Attainment
Nitrogen Dioxide	Unclassifiable/Attainment	Attainment

Table 3.2-3. Attainment Designations in the Mojave Desert Air Basin Portion of Riverside County

Pollutant	Federal Designation	State Designation
Sulfur Dioxide	Attainment	Attainment
PM10 (Inhalable Particulate Matter)	Attainment	Nonattainment
PM2.5 (Fine Particulate Matter)	Attainment	Unclassifiable/Attainment

Note: Attainment or Unclassifiable is treated the same as Attainment for regulatory purposes.
Source: U.S.EPA 2016 (https://www3.epa.gov/region9/air/maps/index.html.); CARB 2016.

There are no nearby criteria air pollutant monitoring stations. The nearest ozone monitoring stations is in Blythe, approximately 35 miles east of the project site. The nearest monitoring station for other pollutants including PM10, PM2.5, NO_2, and CO is in Palm Springs in the neighboring Salton Sea Air Basin, approximately 75 miles west of the project site; the nearest SO_2 monitoring station is in Victorville located approximately 135 miles west northwest of the site. As noted in the PSPP and PSEGS environmental review, data are from areas that are more urbanized than the Project's location and are likely to exceed values at the project location.

Ozone. Ozone is not directly emitted from stationary or mobile sources, but is formed as the result of chemical reactions in the atmosphere between directly emitted nitrogen oxides (NOx) and hydrocarbons (Volatile Organic Compounds [VOCs]) in the presence of sunlight. Pollutant transport from the Los Angeles area of the South Coast Air Basin is one source of the pollution experienced in the eastern Riverside County portion of the MDAB.

The 1-hour and 8-hour ozone concentrations measured at the eastern border of Riverside County have been very slowly decreasing over time. The collected air quality data (not shown) indicate that the ozone violations occurred primarily during the sunny and hot periods typical during May through September. The ozone concentrations in the project area have exceeded state ambient air quality standards.

High ozone concentrations can aggravate respiratory and cardiovascular diseases, irritate eyes, impair cardiopulmonary function, and cause leaf damage (BLM, 2011).

Carbon Monoxide. The MDAB attains the state and federal 1-hour and 8-hour CO standards. The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise. The project area has a lack of significant mobile source emissions and has CO concentrations that are well below the state and federal ambient air quality standards.

CO reduces tolerance from exercise, can cause impairment of mental function, impairment of fetal development, aggravate some heart diseases (angina), and cause death at high levels of exposure (BLM, 2011).

Nitrogen Dioxide. The MDAB attains the state 1-hour and annual and federal annual NO_2 standards. Approximately 90 percent of the NOx emitted from combustion sources is nitric oxide (NO), while the balance is NO_2. NO is oxidized in the atmosphere to NO_2, but some level of photochemical activity is needed for this conversion. The highest concentrations of NO_2 typically occur during the fall. The winter atmospheric conditions can trap emissions near the ground level, but lacking substantial photochemical activity (sun light), NO_2 levels are relatively low. In the

summer the conversion rates of NO to NO_2 are high, but the relatively high temperatures and windy conditions disperse pollutants, preventing the accumulation of NO_2. The NO_2 concentrations in the project area are well below the state and federal ambient air quality standards.

NO_2 can aggravate respiratory diseases, reduce visibility, reduce plant growth, and form acid rain (BLM, 2011).

Sulfur Dioxide. The entire MDAB and all of California is classified as attainment for the state and federal SO_2 standards. Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Sources of SO_2 emissions within the MDAB come from a wide variety of fuels: gaseous, liquid and solid; however, the total SO_2 emissions within the eastern MDAB are limited due to the limited number of major stationary sources and California's and U.S. EPA's substantial reduction in motor vehicle fuel sulfur content. The project area's SO_2 concentrations are well below the state and federal ambient air quality standards.

SO_2 can irritate the upper respiratory tract and be injurious to lung tissue causing reduced lung function, including asthma and emphysema. SO_2 can cause plant leaves to be yellow, and be destructive to metals, textiles, leather, finishes, and coatings. SO_2 can limit visibility (BLM, 2011).

Particulate Matter (PM10) and Fine Particulate Matter (PM2.5). PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. MDAB is classified as non-attainment for state PM10 standards and unclassified for the federal PM10 standard. The MDAB is designated as nonattainment for the state PM10 standard.

Fine particulate matter, or PM2.5, is derived mainly either from the combustion of materials, or from precursor gases (SOx, NOx, and VOC) through complex reactions in the atmosphere. PM2.5 consists mostly of sulfates, nitrates, ammonium, elemental carbon, and a small portion of organic and inorganic compounds.

The entire MDAB is classified as attainment for the federal standard and, in the project area, is designated unclassified for the state PM2.5 standards. This divergence in the PM10 and PM2.5 concentration levels and attainment status indicates that most ambient particulate matter is due to localized fugitive dust sources, such as vehicle travel on unpaved roads, agricultural operations, or wind-blown dust.[1]

Particulate matter can aggravate respiratory diseases, can result in reduced lung function, it can increase cause and chest discomfort, causes reduced visibility (BLM, 2011 and CEC, 2010).

[1] Fugitive dust, unlike combustion source particulate and secondary particulate, is composed of a much higher fraction of larger particles than smaller particles. This means that a relatively small portion of fugitive dust is PM2.5, and PM10 is dominant. When PM10 ambient concentrations are significantly higher than PM2.5 ambient concentrations this tends to indicate that fugitive dust sources are dominant. If PM10 and PM2.5 concentrations are at comparable levels, then combustion sources and sources of precursors to secondary particulate are dominant.

3.3 Global Climate Change

The previous analyses of impacts on global climate change for the previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Amendment (RSA) for the PSPP, Section C.I, Appendix AIR-1: Greenhouse Gas Emissions (pages C.1-73 through C.1-92).
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.3, Global Climate Change (pages 3.3-1 through 3.3-9).

The affected environment and regulatory information presented in this section relies on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated emissions estimates and information on climate change impacts. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

Climate change refers to any significant change in measures of climate (temperature, precipitation, or wind) that lasts for an extended period (e.g., decades or longer). A number of factors may affect climate change, including: natural cycles (e.g., changes in the sun's intensity or earth's orbit around the sun); natural processes within the climate system (e.g., changes in ocean circulation); and human activities that lead to changes the atmosphere's composition (e.g., burning fossil fuels), land surface (e.g., deforestation, reforestation, urbanization, and desertification), and bodies of water (e.g., oceanic acidification, sea level rise, and formation of dry lakes) (BLM, 2011).

Excessive emissions of greenhouse gases (GHGs) have been linked to the exacerbation of climate change. Human activity contributes to emissions of six primary GHGs include: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). California is a substantial contributor to global GHG emissions as it causes the second-most energy-related emissions of any state in the U.S. (U.S. EIA, 2016). The IPCC (Intergovernmental Panel on Climate Change) Fifth Assessment Report (IPCC, 2013) analyses conclude that it is extremely likely that the anthropogenic increase in GHG concentrations has caused more than half of the observed increase in global average surface temperature from 1951 to 2010. Concentrations of CO_2 in the atmosphere have increased by more than 40 percent since the Industrial Revolution. That the planet has warmed is "unequivocal," and is corroborated though multiple lines of evidence, as is the conclusion that the causes are very likely human in origin (U.S. GCRP, 2014).

After a thorough examination of the scientific evidence on the causes and effects of current and future climate change, as well as other effects of GHGs, the EPA concluded that the science compellingly supports a positive endangerment finding for both public health and welfare. The EPA relied heavily upon the major findings and conclusions from recent assessments of the U.S. Climate Change Science Program and the IPCC. The EPA made this endangerment finding after considering both observed and projected future effects of climate change, key uncertainties, and the full range of risks and effects to public health and welfare occurring within the United States (BLM, 2011).

According to the 2010 California Climate Action Team (CAT) Report, the following climate change effects, based on the IPCC trends, can be expected in California over the next century:

1. Increasing temperatures from 2.7 °F to 10.5 °F under the higher emission scenarios;
2. Increased electricity demand and emergency response, particularly in the hot summer months.
3. Increased vulnerability of forests due to pest infestation and increased temperatures; and
4. A diminishing Sierra snowpack, declining by at least 25 percent by 2050, threatening the State's water supply;

In addition to these anticipated trends, several additional potential effects of climate change have been identified in recent literature that are potentially relevant to the Project. These include:

1. Changes in flooding regimes and drought, potentially including more frequent extreme weather conditions, such as floods and droughts;
2. Changes in weather patterns that could result in altered drainage patterns and/or increases in erosion and sedimentation;
3. Changes in the availability of water resources to support beneficial use;
4. Changes in the distribution of biological species and/or habitats;
5. Increases in wildfire risk and heat waves, which could affect worker safety; and
6. Changes in soil moisture content, including potential for increases in fugitive dust emissions.

Electricity generation from fossil fuels produces GHGs along with the combustion-related criteria air pollutants historically regulated under the federal and state Clean Air Acts. For fossil fuel-fired power plants, the GHG emissions include primarily carbon dioxide, with smaller amounts of nitrous oxide (N_2O), and methane (CH_4) from unburned natural gas. Other sources of GHG emissions include sulfur hexafluoride (SF_6) from high-voltage equipment and hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs) from refrigeration/chiller equipment. GHG emissions from the electricity sector are dominated by CO_2 emissions from carbon-based fuels. Other sources of GHG emissions are small and also are more likely to be easily controlled or reused or recycled, but are nevertheless documented here as some of the compounds have very high global warming potentials, which is a measure of how much a given mass of greenhouse gas is estimated to contribute to global warming and is devised to enable comparison of the warming effects of different gases relative to CO_2 (BLM, 2011).

3.3.1 Regulatory Framework

Federal

Executive Order (EO) No. 13514 Federal Leadership in Environmental, Energy, and Economic Performance

From the White House, Executive Order (EO) No. 13514 Federal Leadership in Environmental, Energy, and Economic Performance expands national efforts to reduce GHG emissions and

establishes environmental performance requirements for Federal agencies identified in EO No. 13423 Federal Leadership in Environmental, Energy, and Economic Performance. EO No. 13514 integrates a strategy for sustainability into the Federal Government and makes reduction of GHG emissions a priority for Federal agencies.

Secretarial Orders 3226 and 3285

From the Department of the Interior (DOI), Secretarial Orders 3226 (Climate Change and the Department of Interior, as amended) and 3285 (Renewable Energy Development by the Department of Interior) direct bureaus and offices within the Department to respond in a timely manner to climate change issues and make development of renewable energy a priority. On September 14, 2009, Secretary of the Interior, Ken Salazar, issued Order No. 3289 (Addressing the Impacts of Climate Change on America's Water, Land, and Other Natural and Cultural Resources). The Order establishes an approach for increasing understanding of climate change and responding to impacts related to climate change pertaining to tribes and to the natural and cultural resources that the DOI manages. The document specifically identifies potential impacts such as potential changes in flood risk and water supply, sea level rise, changes in wildlife and habitat populations and their migration patterns, new invasions of exotic species and increased threat of wildland fire. The Order includes Climate Change Response Planning Requirements, which require each bureau and office within the DOI, including the BLM, to consider and analyze potential climate change impacts when undertaking long-range planning exercises, setting priorities for scientific research and investigations, developing multi-year management plans, and making major decisions regarding potential use of resources under the DOI's purview.

Title 40 Code of Federal Regulations, Part 98 – Greenhouse Gases Mandatory Reporting Program

Under this rule, suppliers of fossil fuels or industrial GHG, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the U.S.EPA. Facilities classified as general stationary fuel combustion sources, including electricity services (North American Industry Classification System [NAICS] Code 221 as cited in PSPP PA/FEIS Section 3.3) must report emissions if annual rates equal or exceed 25,000 metric tons of GHG. However, the rule does not set specific reporting requirements for electric power generation from solar resources (NAICS Code 221119).

State

Desert Renewable Energy Conservation Plan

The Desert Renewable Energy Conservation Plan (DRECP) was started as a collaboration between the California Energy Commission, California Department of Fish and Game, Bureau of Land Management, and the U.S. Fish and Wildlife Service. The DRECP was intended to facilitate the development of utility-scale renewable energy and transmission projects in the Mojave and Colorado deserts in California. The purpose of the DRECP was to help reach federal and state energy targets to reduce greenhouse gas emissions and address climate change while conserving sensitive species and habitats as well as cultural, scenic, and social resources.

The BLM published the Land Use Plan Amendment (LUPA) and Final EIS for the DRECP in November 2015.

The Record of Decision for the DRECP LUPA was signed in September of 2016. The LUPA applies to nearly 11,000,000 acres of BLM-managed federal lands. The DRECP has amended the California Desert Conservation Area (CDCA) Plan and the Bishop and Bakersfield Resource Management Plans (BLM, 2015).

California Global Warming Solutions Act of 2006 – Assembly Bill 32

In 2006, California enacted the California Global Warming Solutions Act of 2006 (AB 32). AB 32 mandates that the state report and verify its GHG emissions to document reduced GHG emissions statewide to 1990 levels by the year 2020. To facilitate this, the California Air Resources Board (CARB) is required to adopt a statewide emissions limit, adopt regulations to reduce the amount of GHG emissions, and monitor compliance. CARB is the lead agency for implementing AB 32, which set the major milestones for establishing the program.

Although CO_2 is the largest contributor to climate change, AB 32 references five additional GHGs: CH_4, N_2O, SF_6, HFCs, and PFCs. Key elements of California's recommendations for reducing its GHG emissions to 1990 levels by 2020 include the following:

1. Setting targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;
2. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard;
3. Imposing targeted fees on high global warming potential (GWP) gases;
4. Implementing additional measures to address emissions from industrial sources. These proposed measures would regulate fugitive emissions from oil and gas recovery and transmission activities; and
5. Imposing a high GWP mitigation fee to promote the development of alternatives to GWP chemicals and improve recycling and removal of these substances when older units containing them are dismantled.

In recognition of the critical role that local governments will play in the successful implementation of AB 32, CARB recommended a GHG reduction goal for local governments of 15 percent below current levels by 2020 to ensure that their municipal and community-wide emissions match the state's reduction target. AB 32 establishes a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, and cost-effective reductions of GHGs. Under AB 32, CARB is responsible for monitoring and reducing GHG emissions and maintains the existence of the Climate Action Team to coordinate statewide efforts. Additional requirements for CARB include the following (BLM, 2011):

1. Establishing a statewide GHG emissions cap for 2020 based on 1990 emissions;
2. Adopting mandatory reporting rules for significant sources of GHGs;

3. Adopting a plan that indicates how emission reductions would be achieved from significant GHG sources via regulations, market mechanisms, and other actions;

4. Adopting regulations to achieve the maximum technologically feasible and cost-effective reductions in GHGs, including provisions for using both market mechanisms and alternative compliance mechanisms;

5. Convening an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee to advise CARB;

6. Evaluating several factors prior to imposing any mandates or authorizing market mechanisms, including, but not limited to, impacts on California's economy, the environment, and public health; equity between regulated entities; electricity reliability and conformance with other environmental laws, as well as ensuring that the rules do not disproportionately impact low-income communities;

7. Adopting a list of discrete, early action measures to be implemented before January 1, 2010; and

8. Ensuring public notice and opportunity for comment on all CARB actions.

CARB adopted SF_6 regulations (17 California Code of Regulations [CCR] 95350) to reduce SF_6 emissions from electric power system gas-insulated switchgear. The regulations require owners of such switchgear to (1) annually report their SF_6 emissions, (2) determine the emission rate relative to the SF_6 capacity of the switchgear, (3) provide a complete inventory of all gas-insulated switchgear and their SF_6 capacities, (4) produce a SF_6 gas container inventory, and (5) keep all information current for CARB enforcement staff inspection and verification. Existing and new electric transmission facilities and switchgear associated with renewable energy development would be subject to this regulation.

SB 1368 – Emission Performance Standards

In 2006, the State enacted SB 1368 (Public Utilities Code Section 8340 et seq.), which limits California utilities' long-term investments in baseload generation to power plants that meet an emissions performance standard (EPS) of 0.500 MT CO_2 per megawatt-hour (1,100 pounds CO_2/MWh). The EPS applies only to carbon dioxide; it does not apply to emissions of other GHGs converted to carbon dioxide equivalent. The Energy Commission and the California Public Utilities Commission (CPUC) jointly established the EPS, which applies to base load power from new power plants, new investments in existing power plants, and new or renewed contracts with terms of five years or more, including contracts with power plants located outside of California. If a project, in-State or out-of-State, plans to sell base load electricity to a California utility, the utility will have to demonstrate that the project meets the EPS. As a renewable electricity generating facility, the project is determined by rule to be compliant with the SB 1368 EPS.

California Governor's Executive Orders for Statewide Greenhouse Gas Emission Targets

In 2005, Governor Schwarzenegger issued Executive Order S-3-05, which established a goal of reducing GHG emissions below 2000 levels by 2010, below 1990 levels by 2020 and 80 percent below 1990 levels by 2050 [PSPP PA/FEIS Section 3.3]. In 2015, Governor Brown issued Executive Order B-30-15, which established a goal of reducing GHG emissions 40 percent below 1990 levels by 2030. One purpose of the interim (2030) target is to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. Senate Bill 32 (SB 32) of 2016 codified this GHG emissions target to 40% below the 1990 level by 2030.

Achieving California's GHG reduction targets depends on the expanding the availability of renewable energy. Executive Order S-14-08 established the Renewable Portfolio Standard (RPS) goal of achieving 33 percent by 2020, and the Clean Energy and Pollution Reduction Act of 2015 in Senate Bill 350 (De León) established the current RPS objective to increase the procurement of California's electricity from renewable sources to 50 percent by the end of 2030.

South Coast Air Quality Management District

The South Coast Air Quality Management District (SCAQMD) adopted, in December, 2008, its *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules, and Plans* (Interim Threshold), in order to provide a structure for determining level of impact significance for proposed projects that would result in GHG emissions. The Interim Threshold includes a policy objective to capture 90 percent of district-wide GHG emissions from industrial sources, and indicates a GHG emissions threshold of 10,000 metric tons of carbon dioxide equivalent (MTCO2e) per year, including construction emissions amortized over 30 years, as a significance threshold for GHG emissions (SCAQMD, 2008). Following adoption of the Interim Threshold, additional meetings of the working group charged with producing the Interim Threshold have been ongoing. At the time of publication for this report, finalized threshold values had not yet been adopted by the SCAQMD.

Local

The Riverside County General Plan (2015) Air Quality Element discusses the County's GHG Emission Reduction Strategy. As part of the implementation of this strategy, the County established a GHG emissions baseline inventory for 2008. The total emissions from unincorporated Riverside County in 2008 totaled approximately 7.013 million metric tons of carbon dioxide equivalent ($MMTCO_2e$). The efforts toward reducing GHG emissions in unincorporated Riverside County are closely related to the way in which the County operates and makes its discretionary land use decisions. The General Plan includes Riverside County's Climate Action Plan (CAP), which contains further guidance on Riverside County's GHG inventory reduction goals, thresholds, policies, guidelines, and implementation programs.

The County's policies regarding climate change include (Riverside County, 2015):

- inventorying and adopting emission reduction targets,
- working with state agencies to meet GHG emission goals,

- reducing vehicle miles traveled and encouraging land use patterns that reduce vehicle miles traveled,
- encouraging energy efficiency and energy conservation,
- reducing water use,
- facilitating the development and sitting of renewable energy facilities and transmission lines in appropriate locations,
- reducing the amount of waste generated,
- educating the public on ways to reduce their GHG emissions, and
- reducing the emissions of GHG under County direct control.

The CAP adopted by the County of Riverside on December 8, 2015 provides an implementation tool to guide future decisions of the County, including a guidance document in Appendix F of the CAP titled "Greenhouse Gas Emissions, Screening Tables." The procedures for evaluating GHG impacts includes a threshold level of 3,000 MTCO2e per year that allows Riverside County to identify projects that may require a project-specific technical analysis to quantify and mitigate emissions (Riverside County, 2015).

The General Plan includes one policy directly relevant to the Palen Solar Project, to facilitate development and siting of renewable energy facilities and transmission lines in appropriate locations (Policy AQ 20.19).

3.3.2 Existing Conditions

Regional Setting

The Third U.S. National Climate Assessment, released on May 6, 2014, provides the most authoritative and comprehensive source of scientific information to date about climate-change impacts across all U.S. regions and on critical sectors of the economy. For the Southwest U.S., including eastern Riverside County, the National Climate Assessment emphasizes the risks to scarce water resources and states (U.S. GCRP, 2014):

> *Climate changes pose challenges for an already parched region that is expected to get hotter and, in its southern half, significantly drier. Increased heat and changes to rain and snowpack will send ripple effects throughout the region's critical agriculture sector, affecting the lives and economies of 56 million people — a population that is expected to increase 68 percent by 2050, to 94 million. Severe and sustained drought will stress water sources, already over-utilized in many areas, forcing increasing competition among farmers, energy producers, urban dwellers, and plant and animal life for the region's most precious resource.*

Carbon Sequestration

There is existing vegetation located on site, and this vegetation is expected to provide ongoing natural carbon uptake. Wohlfahrt et al. (2008 as cited in the CEC RSA, 2010) completed an evaluation of carbon uptake by natural vegetation in Mojave Desert systems. The study indicates

that desert plant communities may result in the uptake of carbon in amounts as high as 100 grams per square meter per year. This would equate to a natural carbon uptake, under existing conditions, of approximately 1.48 MT CO_2 per acre per year [PSPP PA/FEIS Section 3.3]. However, the DRECP LUPA and FEIS has determined that based on the analyses done for the existing energy projects in the DRECP area, the projected carbon sequestration losses from the loss of vegetation and land use conversion from the individual projects are either minimal or were not quantified. Decreases in the carbon sequestration ability of soil microbes affected by land use conversion at the locations of the existing energy projects were not taken into account (BLM, 2015). Other available data for the carbon mass sequestered in a given area include a factor of 4.31 MT CO_2 per acre per year for "grasslands," as reported by the California Climate Action Registry and used in the California Emissions Estimator Model (CalEEMod, 2013). This factor for carbon accumulation includes woody vegetation and other non-grass vegetation such as herbs and brushes and the shrub communities that fall below the threshold values used in the forest land category (CalEEMod, 2013).

3.4 Cultural Resources

This section describes the affected environment for cultural resources for the Palen Solar PV Project. The analyses of cultural resources for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 California Energy Commission (CEC) Revised Staff Assessment (RSA) for the PSPP, Section C.3, Cultural Resources (pages C.3-1 through C.3-164).
- For CEQA, the 2013 CEC Final Staff Assessment (FSA) for the PSEGS (solar power tower analysis), Section 4.3, Cultural Resources (pages 4.3-1 through 4.3-244).
- For CEQA, the 2014 CEC Revised Presiding Member's Proposed Decision for the PSEGS.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.4, Cultural Resources (pages 3.4-1 through 3.4-42).
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.4, Cultural Resources (pages 3.4-1 through 3.4-4).

In addition, this analysis incorporates new studies associated with the Palen Solar PV Project (Tennyson et al., 2017).

As stated in the PSPP PA/FEIS, cultural resources are categorized as buildings, sites, structures, objects, and districts for the purposes of complying with NEPA and Section 106 of the National Historic Preservation Act (NHPA). Three kinds of cultural resources are considered in this assessment: prehistoric, ethnographic, and historic.

Prehistoric archaeological resources are associated with human occupation and use prior to sustained European contact. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. Groupings of prehistoric resources are also recognized as archaeological districts. In California, the prehistoric period began over 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans permanently settled in California.

Ethnographic resources represent the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, Latino, or Asian immigrants. They may include traditional resource-collecting areas, ceremonial sites, value-imbued landscape features, cemeteries, shrines, or ethnic neighborhoods and structures.

Historic-period resources, both archaeological and architectural, are associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, traveled ways, artifacts, or other evidence of human activity. Groupings of historic-period resources are also recognized as historic districts.

Under federal and state historic preservation law, cultural resources must be at least 50 years old to have sufficient historical importance to merit consideration of eligibility for listing in the National Register of Historic Places (NRHP) or in the California Register of Historical Resources (CRHR). A resource less than 50 years of age must be of exceptional historical importance to be considered for listing.

Tribal cultural resources (TCR) is a newly defined class of resources under state law. TCRs include sites, features, places, cultural landscapes, and sacred places or objects that have cultural value or significance to a Tribe. To qualify as a TCR, the resource must either: (1) be listed on, or be eligible for listing on, the California Register of Historical Resources or other local historic register; or (2) constitute a resource that the lead agency, at its discretion and supported by substantial evidence, determines should be treated as a TCR (PRC § 21074(a)(2)). Native American tribes that are traditionally and culturally affiliated with a geographic area can provide lead agencies with expert knowledge of TCRs.

3.4.1 Regulatory Framework

Federal

There are numerous federal regulations, executive orders, and policies that direct management of cultural resources on federal lands and by federal agencies. These include the NHPA, the Archaeological Resources Protection Act (ARPA), the Native American Graves Protection and Repatriation Act (NAGPRA), the American Indian Religious Freedom Act (AIRFA), Executive Order (EO) 13007, and the Antiquities Act. For the Bureau of Land Management (BLM) in particular, the Federal Land Policy and Management Act (FLPMA) and several sections of BLM Manuals are relevant as well. The following is a discussion of the most pertinent laws affecting the Palen Solar PV Project and the impact analysis included in the Draft Supplemental EIS/EIR and Land Use Plan Amendment (LUPA).

The principal federal law addressing cultural resources is the NHPA of 1966, as amended (54 United States Code [USC], Section 300101), and its implementing regulations (36 Code of Federal Regulations [CFR], Part 800), that primarily address compliance with Section 106 of the act. Section 106 of the act requires that Federal agencies take into account the effect of any undertaking on historic properties, and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment. The implementing regulations describe the process for identifying and evaluating historic properties, for assessing the effects of federal actions on historic properties, and for consulting with interested parties, including the State Historic Preservation Office (SHPO), Indian tribes, local governments, and the public to develop measures that would avoid, reduce, or minimize adverse effects to historic properties. The results of this consultation are presented in Chapter 5. The term "historic properties" refers to cultural resources that are listed on, or meet specific criteria of eligibility for listing on, the National Register of Historic Places. These criteria consist of the quality of significance in American history, architecture, archaeology, engineering, and culture present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. *That are associated with events that have made a significant contribution to the broad patterns of our history; or*

B. *That are associated with the lives of persons significant in our past; or*

C. *That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*

D. That have yielded, or may be likely to yield, information important in prehistory or history.

Archaeological Resources Protection Act of 1979 (ARPA) (16 USC 470aa et seq.) protects archaeological resources from vandalism and unauthorized collecting on public and Indian lands.

Requirements for responding to discoveries of Native American human remains and associated funerary objects on federal land are addressed under the NAGPRA (Public Law 101-601) and its implementing regulations found at Title 43 CFR Part 10. For those portions of the Proposed Action or alternative on public land, the BLM will comply with the law and regulations by determining lineal descendants and culturally affiliated Indian tribes and by carrying out appropriate treatment and disposition of any discovered remains, including transfer of custody.

The American Indian Religious Freedom Act of 1978 (AIRFA) (Title 42, U.S. Code, Section 1996) establishes policy of respect and protection of Native American religious practices. It seeks to correct federal policies and practices that could (a) deny access to sacred sites required in traditional religions, (b) prohibit use and possession of sacred objects necessary for religious ceremonies, and (c) intrude upon or interfere with religious ceremonies. The BLM complies with AIRFA by obtaining and considering the views of traditional religious practitioners as part of the NEPA compliance process.

EO 13007 directs federal agencies to accommodate access to, and ceremonial use of, Indian sacred sites by Indian religious practitioners. It requires federal agencies to avoid adversely affecting the physical integrity of sacred sites to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions. EO 13007 reinforces the purposes expressed in AIRFA. The BLM complies with EO 13007 by consulting with tribal governments and Indian religious practitioners as part of the NEPA compliance process.

The Antiquities Act of 1906 [16 United States Code (USC) 431–433] establishes criminal penalties for unauthorized destruction or appropriation of "any historic or prehistoric ruin or monument, or any object of antiquity" on federal land; empowers the President to establish historical monuments and landmarks.

FLPMA establishes policy and goals to be followed in the administration of public lands by the BLM. The intent of FLPMA is to protect and administer public lands within the framework of a program of multiple-use and sustained yield, and the maintenance of environmental quality. Particular emphasis is placed on the protection of the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources and archaeological values.

State

There are numerous state regulations and policies that direct management of cultural resources on state lands and by state agencies. The following is a discussion of the most pertinent laws affecting the Palen Solar PV Project and impact analysis from a state perspective.

Under CEQA, cultural resources listed in, or determined to be eligible for listing in, the CRHR or a local register meet the CEQA definition of "historical resources" and must be given consideration in the CEQA process. For this Draft Supplemental EIS/EIR, effects on historical resources may be considered impacts of the Proposed Action. Under the California Code of Regulations, Title 14,

Chapter 11.5, properties listed on or formally determined to be eligible for listing in the NRHP are automatically eligible for listing in the CRHR. A resource is generally considered to be historically significant under CEQA if it meets the criteria for listing in the CRHR. These criteria are essentially the same as the eligibility criteria for the NRHP. In addition to being at least 50 years old, a resource must meet at least one (and may meet more than one) of the following four criteria:

- Criterion 1, is associated with events that have made a significant contribution to the broad patterns of our history;
- Criterion 2, is associated with the lives of persons significant in our past;
- Criterion 3, embodies the distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values; or
- Criterion 4, has yielded, or may be likely to yield, information important to history or prehistory.

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association.

Additionally, CEQA states that it is the responsibility of the lead agency to determine whether the project will have a significant effect on "unique" archaeological resources. An archaeological artifact, object, or site can meet CEQA's definition of a unique archaeological resource even if it does not qualify as a historical resource (PRC 21083.2[g]; 14 CCR 15064.5[c][3]). An archaeological artifact, object, or site is considered a unique archaeological resource if "it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria (PRC 21083.2[g]):

- Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person."
- If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require that reasonable efforts be taken to preserve these resources in place or provide mitigation measures.

Public Resources Code (PRC), Section 5097.98(b) and (e) requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the Native American Heritage Commission-identified Most Likely Descendants (MLD) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to re-inter the remains elsewhere on the property in a location not subject to further disturbance. Section 5097.99 establishes as a felony the acquisition, possession, sale, or dissection with malice or wantonness Native American remains or funerary artifacts. Finally, Section 5097.991 establishes as state policy the repatriation of Native American remains and funerary artifacts.

Health and Safety Code (HSC), Section 7050 makes it a misdemeanor to mutilate, disinter, wantonly disturb, or willfully remove human remains found outside a cemetery and further requires a project owner to halt construction if human remains are discovered and to contact the county coroner.

PRC Sections 21073, 21074, 21080.3, 21082.3, 21083.09, 21084.2, and 5097.94) (Assembly Bill AB 52 2014). The Public Resources Code section 21074 defines a TCR as "a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe." TCRs also include "non-unique archaeological resources" that may not be scientifically significant, but still hold sacred or cultural value to a consulting tribe.

CEQA requires that impacts to TCRs be identified and, if impacts will be significant, that mitigation measures be implemented to reduce those impacts to the extent feasible (PRC § 21081). In the protection and management of the cultural environment, both the statute and the CEQA Guidelines (14 California Code of Regulations Section 15000 et seq.) provide definitions and standards for management of TCRs.

A resource shall be considered significant if it is: (1) listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PCR § 5020.1(k) (discussed in detail above); or (2) a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in of PCR § 5024.1(c). In applying these criteria, the lead agency must consider the significance of the resource to a California Native American tribe.

A project may have substantial adverse change in the significance of a TCR if:

- The adverse change is identified through consultation with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project (PCR § 21084.2).
- The resource is listed, or eligible for listing, in the California Register of Historical Resources or in a local register of historical resources, and it is demolished as described in detail above (State CEQA Guidelines section 15064.5 (b)).

The fact that a TCR is not listed in, or determined to be ineligible for listing in, the CRHR, is not included in a local register of historical resources, or is not identified in a historical resources survey does not preclude a lead agency from determining that the resource may be a historical resource. (Please refer to Section 5.5 for a detailed discussion of the term "historical resource" pursuant to Guideline 15064.5(a)).

Riverside County

The following policies outlined in the Riverside County General Plan (2015) address cultural resources:

- **OS 19.1** Cultural resources (both prehistoric and historic) are a valued part of the history of the County of Riverside.

- **OS 19.2** The County of Riverside shall establish a Cultural Resources Program in consultation with Tribes and the professional cultural resources consulting community that, at a minimum would address each of the following: application of the Cultural Resources Program to projects subject to environmental review; government-to-government consultation; application processing requirements; information database(s); confidentiality of site locations; content and review of technical studies; professional consultant qualifications and requirements; site monitoring; examples of preservation and mitigation techniques and methods; curation and the descendant community consultation requirements of local, state and federal law. (AI 144)
- **OS 19.3** Review proposed development for the possibility of cultural resources and for compliance with the cultural resources program.
- **OS 19.4** To the extent feasible, designate as open space and allocate resources and/or tax credits to prioritize the protection of cultural resources preserved in place or left in an undisturbed state. (AI 145)
- **OS 19.5** Exercise sensitivity and respect for human remains from both prehistoric and historic time periods and comply with all applicable laws concerning such remains.

3.4.2 Existing Conditions

Information provided regarding the setting of the Palen Solar PV Project places it in its geographical and geological context. Additionally, the prehistoric, ethnographic, and historical background provides the context for the evaluation of the NRHP and CRHR eligibility of any identified cultural resources within the Area of Potential Effects (APE) for the Palen Solar PV Project.

3.4.2.1 Regional Setting

The proposed Palen Solar PV Project site is located in eastern Riverside County within the central Chuckwalla Valley, an east-southeast-trending valley in California's Mojave Desert Geomorphic Province. This province is characterized by east-west-trending ranges separated by desert valleys with enclosed drainages and dry lakes. The project site is located within the Chuckwalla Valley, which is bounded on the west by the Eagle Mountains, on the northeast by the Palen Mountains, and to the northwest by the Coxcomb Mountains. The Chuckwalla Mountains are to the south. The elevation of Chuckwalla Valley ranges from under 400 feet at its lowest point to 1,800 feet along the valley flanks. The surrounding mountains reach between 3,000 and 5,000 feet in elevation. This area receives an average of 5 inches of rain per year. The site is located near the transition between the Mojave and Colorado Deserts.

3.4.2.2 Environment

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time is central to understanding whether and how an area was used during prehistory and history. During the time that humans have lived in California, the Mojave Desert has undergone several climatic shifts. These shifts have resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the vicinity of the project site. Consequently, it is important to consider the historical character of local climate change, or the paleoclimate, and the effects of the paleoclimate on the physical development of the area and its ecology.

Studies of pack-rat middens and lake-level studies have provided a picture of the paleoclimate and paleoecology of the Mojave and Colorado Deserts. During prehistoric times, this region fluctuated between cool-and-moist and warm-and-dry periods. These fluctuations in temperature and moisture were crucial to the human occupation of the region. Environmental changes also had important implications for the project vicinity specifically, because of the proximity of Palen Lake. During cool, wet times the regional lakes filled and the necessary resources for human occupation were available. During warm, dry times making a living was difficult during summers but winter temperatures were mild and the dispersed springs, seeps and *tinajas* allowed people to travel from place to place knowing where the water and other resources were available.

3.4.2.3 Geology

The following discussion is primarily excerpted from PSPP SA/FEIS Section 3.4 (Cultural Resources; BLM, 2011). Please see that document for full citations. The project site is located within the geomorphic province known as the Basin and Range, situated in the Chuckwalla Valley between the Chuckwalla Mountains to the south and the Palen and Coxcomb mountains to the northeast and northwest respectively. The underlying geology consists of Quaternary alluvial, aeolian, and lakebed deposits ranging from Pleistocene (1.8 million years old) to Holocene (8,000 BC to Recent) in age.

Quaternary lake deposits of Ford, Palen, and Hayfield dry lakes lie in the lowest portions of Chuckwalla Valley. Ford and Palen dry lakes are bordered by extensive areas covered by Quaternary dune sand. Around these areas and throughout the other valleys, lies Quaternary alluvium. Nearly all of the mountain ranges within the project vicinity are fringed by wide aprons of older Pleistocene alluvial fans. A few small areas also contain some earlier Plio-Pleistocene non-marine sediments. Where active drainages have been incised into the Pleistocene deposits, fingers of the more recent alluvium extend upwards toward the mountain ranges. The Pleistocene alluvial deposits are of particular relevance for cultural resources because they have formed relatively stable surfaces, often overlain with desert pavement that has preserved the traces of prehistoric trails as well as other archaeological features. Desert pavement is a surface of angular, interlocking fragments of pebbles, gravel, or boulders in arid areas which forms on level or gently sloping desert flats, fans, or bajadas and lake and river terraces dating to the Pleistocene Epoch. These alluvial terraces also were important sources of fine grained cryptocrystalline tool stone.

Portions of the proposed substation and transmission line route are underlain by Quaternary intermediate alluvium, estimated to be 200,000 and 2,000 years old, consisting variously of gravel, sand, and silt, being situated on top of inactive older alluvial fan surfaces. The bulk of the project area is comprised of Quaternary younger alluvium, locally dated as AD 1 to present, composed of silt, sand, and gravel derived from the surrounding mountains.

In contrast, the northeastern portion of the proposed site is blanketed with surficial Quaternary lake bed deposits underlain by both eolian deposits and younger alluvium. These lake bed deposits are weakly consolidated to slightly dissected and in part overlain by modern playa deposits consisting of partly gypsiferous silt and clay. Active sand dunes and sand sheets of recent age also occur in the northeastern portion of the project area. The transition zone between lake bed and dune field is a mix of strongly deflated areas, interspersed with hummocky, linear, dome, and blowout dunes.

From southwest to northeast, the geomorphic landscape consists of a broad bajada (a coalescing of neighboring alluvial fans into a single apron of deposits) with parallel drainages of parallel rills, gullies, and washes that flow northeast toward a dune field in the northeast corner of the project area, bordering Palen Dry Lake bed.

Geoarchaeology and Buried Site Sensitivity

The following discussion is primarily excerpted from PSPP SA/FEIS Section 3.4 (Cultural Resources; BLM, 2011), from PSEGS Draft SEIS Section 3.4 (Cultural Resources; BLM, 2013) and the 2017 PSPV cultural resources technical report (Tennyson et al., 2017). Please see the relevant document for full citations.

Geoarchaeological monitoring of a geotechnical investigation as part of the PSPP took place July 20–28, 2009. Excavations of 12 boreholes and eight test pits were observed for presence/absence of paleosols, archaeological artifacts, or other evidence of archaeological deposition. Stratigraphic samples were collected for sedimentological and mineralogical data. Test pits, 1.5 to 3 meters deep, were placed in locations where deep footings or weight-bearing loads are planned. No cultural resources were found, and no evidence of subsurface paleosols or cultural deposits was noted during the course of monitoring.

Observations of the surface topography and subsurface deposits from the test pits suggest that the site is dominated by a roughly 10- to 33-centimeter-thick veneer of soil (A horizon)1 formed in fluvial (re-worked alluvial fan deposits) and eolian (wind-deposited) sands and fluvial gravels originating from the Pleistocene alluvial fans of the surrounding mountain slopes. A-horizon soils consist of olive gray gravelly sand with sparse roots, subangular pebbles, angular blocky structure, and a clear wavy boundary. The C-horizon consists of a C1 horizon of storm couplets overlaying a C2 and C3 horizon of alluvial and dune sands, as well as alluvial gravels. Data from the borings indicate that the deeper subsurface deposits, below 3 meters, consist of alluvial fan sand and gravels that appear to represent alluvial fan transgression and aggradation, and clay that likely correlates to transgression of early lacustrine (lake) deposits during glacial periods and stable phases of the coalescing alluvial fans.

On the basis of these observations, the potential for buried shallow archaeological deposits is highest within the northeast quadrant of the project site, where wave cut platforms of paleo-lacustrine and beach deposits were observed beneath dune deposits less than a meter below the surface. Within the remainder of the area, if buried deposits are present, they are more likely to be deeper (up to 20 feet), due to the greater depth of alluvial fan deposition. Archaeological deposits at depth, within the alluvial fan deposits, have the potential to be heavily disturbed by millennia of alluvial fan transgression and erosion processes. Over the last 80 years, however, dikes, constructed on the upslope side of U.S. Route 60/70 in the 1930s, have protected this area by diverting stormwater runoff.

A geoarchaeological assessment as part of PSEGS was prepared and is based on a review of available literature regarding the Chuckwalla Valley and Palen Dry Lake sub-basin, examination of high resolution satellite and traditional imagery, and in-field examination of the project area and selected parts of Chuckwalla Valley and adjacent areas.

This study identified the former presence of pluvial lakes that may have existed prior to the late Pleistocene; however, no lakes were identified that would coincide with human occupation of the area. Most land surfaces within the footprint area are younger than 5,000 years old, and most are younger than 3,000 years old. The project area is situated on an alluvial fan that contains few flora or faunal, or water resources. Most prehistoric sites in and near the project area are situated on alluvial fan surfaces, which have been modified by channel shift, channel erosion and deposition, aeolian deflation and deposition, bioturbation, and pedogenic processes, resulting in sites with low spatial or stratigraphic integrity.

Because of surface and subsurface flow, relatively thick sands and numerous niche environments (the most likely area for the presence of prehistoric archaeological resources) is located on the eastern/northern side of the drainage between Palen basin and Ford Dry Lake basin and located more than 1 mile outside the project area.

The overall likelihood of encountering buried cultural deposits within the project area is low, but most likely within distal alluvial fan segments that overlap with aeolian sand transport corridors.

A more exhaustive study was conducted at the nearby Ford Lake playa. That study has defined a local depositional regime of geomorphic, alluvial fan surfaces, which appears to correlate well with the fan gradient zones observed on the piedmont in the Project. These observations were made at two nearby piedmont landforms formed at the bases of the Palen and McCoy mountains. These piedmonts are situated at the east end of Chuckwalla Valley, along the north side of the Ford Lake playa, approximately 4 miles to the east of the Project. These playas are related to one another in that both are fed by the Pinto Wash to the northwest and drainages in Palen Valley to the north. Six geomorphic surfaces were defined from the highest to lowest elevation of these bajadas. In the upper areas of both bajadas, nearest the mountains, the fan surfaces contained "incised washes with remnant surfaces exhibiting well-developed desert pavements and desert varnish coverage." These surfaces were designated as older alluvial fan deposits (Qoaf) and were estimated to be of Late Pleistocene age, at least 8000 B.P. On the lower piedmont/fan surfaces some variation was noted between the two piedmonts. This was indicated by the presence of a relict lake shoreline within the Palen Mountain piedmont surface, nearest the Ford Lake playa, which indicated that a former depositional environment had sufficiently stabilized to preserve the relict shoreline erosional features. This surface was designated as intermediate and was composed of alluvial fan deposits (Qiaf) estimated to be Mid-Holocene, from 4000 to 8000 B.P. The corresponding surface on the McCoy Mountain piedmont did not exhibit the shoreline, which indicated that an active, aggrading, depositional environment, sufficient to cover relict shoreline, had occurred with this surface. This surface was designated as younger alluvial fan deposits (Qyaf) and was estimated to be Late Holocene, from 0 to 8000 B.P. At the lower edge of the piedmont, fan deposits interfinger with alluvium deposited by the valley-axial drainage system along the floor of the valley in an aggrading depositional environment (Qyva). These mostly alluvial deposits were estimated to span the Holocene period (from 0 to 12,000 B.P.) and to be 6 m to 30 m in thickness. The last surface defined was one created on a mixture of alluvial and aeolian deposits (Qyma). This surface was estimated to have developed from 0 to 2000 B.P (Tennyson et al., 2017).

When the surfaces identified at Ford Lake playa are compared to those observed in the Project, a similarity is apparent, suggesting a correlation between the areas. The oldest fan deposits (Qoaf), likely correlate with those in the southernmost area of the Project, and the intermediate fan deposits

on the Palen Mountains piedmont (Qiaf), and the younger fan deposits on the McCoy Mountains piedmont (Qyaf), to possibly correlate with the sediments located in the south-central, central, and north-central areas of the Project. The valley alluvial sediments (Qyva) would appear likely to correlate with the deposit surfaces in the northern areas and the Qyma deposits with those in the northeastern portion of the Project (Tennyson et al., 2017).

If it is assumed that the correlation between the Project and the two Piedmont areas to the east is valid, then similarities in both age and potential for subsurface archaeological resources in the two areas may also be comparable. The Ford Lake study indicates that the oldest fan deposits (Qoaf), because of their age (Late Pleistocene), are unlikely to contain subsurface cultural deposits and artifacts. The intermediate fan deposits on the Palen Mountains Piedmont (Qiaf), the younger fan deposits on the McCoy Mountains piedmont (Qyaf), and the valley alluvial sediments (Qyva), because they were created during the Holocene when human occupation of the area was possible, were all considered to have some potential for subsurface deposits and artifacts. However, because of the high-energy depositional environment in the fan deposits (Qiaf, Qyaf) and the variety of depositional circumstances in the Qyva deposits (alluvial, fan, lacustrine), a potential for disturbance in these deposits was considered high. The last deposits identified, the younger mixed alluvial and aeolian sediments (Qyma), due to their lower-energy, depositional environment, and period of deposition (0 to 2000 B.P.), were considered to have the best potential for the preservation of artifact integrity and context (Tennyson et al., 2017).

For the Palen Mountains and McCoy Mountains piedmonts, the geologic make-up of the piedmont in the Project provides for varying possibilities for the preservation and/or destruction of prehistoric sites. While, in general, the alluvial fan areas with intact, varnished, desert pavements (i.e., Late Pleistocene and Early Holocene in age) may have less potential for subsurface resources, they do provide for the most likely preservation of exclusively surface types of sites such as trails, ceramic scatters (pot drops), and flaking stations. The more geologically recent fan areas (Middle to Late Holocene) with fewer well-developed and varnished pavements can also contain preserved prehistoric sites with the possibility for both subsurface and surficial resources. Also possible in these and the earlier areas would be intrusive pits or other excavated types of features from more recent human activity. In the less stable areas containing recent sediments (Late Holocene) and with active alluvial and aeolian deposition and erosional processes occurring, the possibility for subsurface and/or buried cultural deposits increases, while the preservation of intact, older fragile surface features such as trails, ceramic scatters (including pot drops), and flaking stations decreases. These latter areas represent relatively large portions of the north-central and northern portions of the Project and may include active wash areas in the earlier southern portion of the Project as well (Tennyson et al., 2017).

3.4.2.4 Paleoclimate and Paleoenvironment

Information on paleoclimate and paleoenvironment for the southern Mojave and northern Sonoran (Colorado) deserts are derived from plant macrofossils found in packrat middens and stratigraphic studies of playa and dry lake deposits years. The geologic epoch following the ice age, or Pleistocene, the Holocene, in which humans are known to have occupied North America, began approximately 12,000 years ago. For purposes of this discussion, the Holocene is divided into four periods: Early, Middle, Early Late, and Late Late. (The following discussion relies on information

from PSPP SA/FEIS Section 3.4 (Cultural Resources; BLM, 2011) and from PSEGS Draft SEIS Section 3.4 (Cultural Resources; BLM, 2013). Please see the relevant document for full citations.

Early Holocene (10,000-6000 BC)

During the Late Pleistocene and Early Holocene, as the climate became warmer and drier, extensive lowland conifer woodlands retreated upslope and were replaced by desert scrub associations. In the northern Sonoran Desert, around 9,500 BC, hot desert plants (pigmy cedar, cat claw acacia) began dispersing into the region. From about 8,400 BC on, creosote bush begins to appear. This warmer drier period, however, is also noted for witnessing episodes of greater precipitation. In the Mojave Desert, three high lake-stands have been identified at Silver Lake playa, dating between 13,000 and 7,300 BC. Evidence indicates that two moister climatic intervals, dating between 10,500 and 9,500 BC, occurred, based on a pair of caliche beds near Cadiz Dry Lake that were found to contain traces of human stone tool use (BLM, 2011).

Middle Holocene (6000-3500 BC)

The subsequent Middle Holocene was the warmest and driest interval of the entire Holocene. Desert shrub vegetation dominated lowland and mid-level elevation localities. White burrobush and creosote bush increased in abundance. A dearth of vegetation data from the Middle Holocene suggests plant cover was probably very sparse as a consequence of severe drought conditions. Between approximately 4,800 and 3,000 BC, little evidence exists for summer rainfall. Evidence indicates that a climatic interval, dating around 6,500 to 6,000 BC, probably resulted in lake filling based on the discovery of a site of that age, found in the fossil dunes near Bristol Dry Lake (BLM, 2011).

Early Late Holocene (3500 BC–AD 1)

The Early Late Holocene has been characterized as a period of relatively warm and dry conditions (sometimes drought) interspersed with evidence of cooler moister regimes. For example, evidence of peat deposits, dating to 3,000 BC, has been found at various spring localities in the Mojave Desert. Similarly, around 1,800 BC, a significant increase in the density of pinyon-juniper woodland took place in southern Nevada, suggesting cooler temperatures and winter-dominant precipitation. In the Mojave Desert, a high lake-stand at Silver Lake playa occurred approximately 1,620 BC evidence indicates that a climatic interval, about 1,000 BC, probably resulted in lake filling again, based on evidence of shoreline camping at Cadiz Dry Lake (BLM, 2011).

Late Late Holocene (AD 1–present)

During the Late Late Holocene, temperature and precipitation patterns fluctuated significantly, swinging between periods of drought and relatively warm conditions with periods of summer-dominant precipitation and milder winters, contrasting with periods of cooler and somewhat drier conditions and increased winter-dominant precipitation, reminiscent of the previous epoch's ice age. Modern conditions have prevailed over the last 200 years, with increases in the distribution of pinyon pine, at the higher altitudes as well as expansion of saltbush and the creosote bush/white burrobush associations in the desert lowlands (BLM, 2011).

Evidence suggests that a few hundred years ago, during the "Little Ice Age," rains would have maintained a marshy shallow lake in the Palen basin, supporting subsistence resources favorable for lakeshore hunting and gathering. This is based on hunting and processing tools, as well as red/buff pottery found in fossil dunes at the northwest end of the lake. Large areas of residual sediments stand as "witness columns" and eroding plateaus, 1–2 meters higher than the present lakebed, indicating the former presence of an older lake. Rich archaeological deposits, mixed with lag gravel, are exposed near the base of Palen's eroding dunes (BLM, 2011).

3.4.2.5 Prehistoric Background

During the 1970s, the BLM undertook a large-scale cultural resources inventory of the Central Mojave and Colorado Desert Regions. Crabtree, in an overview of the region, subsequently summarized the history of archaeological study, identified the cultural chronology and common site types observed, and outlined the research topics of interest at that time. Subsequent cultural resources management investigations have contributed additional information to help refine our understanding of the prehistory of this region.

An initial cultural chronology-culture history scheme for the Colorado Desert was developed in the 1930s and 1940s. This scheme has formed the foundation for subsequent efforts, most recently expressed by Sutton and others in 2007 relating the temporal periods and complexes delineated to those found in the Mojave Desert.

This discussion of the prehistoric time periods is primarily excerpted from PSPP SA/FEIS Section 3.4 (Cultural Resources, Prehistoric Background). Please see that document for full citations.

Pre-Clovis

Pre-Clovis culture is a term used by archaeologists to refer to the founding populations of the Americas. Up until the identification of pre-Clovis, the first absolutely agreed-upon culture in the Americas was a Paleoindian culture called Clovis, after the type site discovered in New Mexico in the 1920s. Sites identified as Clovis dated no more than ~11,200 years ago, and the sites reflected a fairly uniform living strategy, that of predation on now-extinct megafauna, including mammoths, mastodons, wild horses, and bison. Beginning in the 1970s or so, sites predating Clovis began to be discovered in North America (such as Meadowcroft Rockshelter and Cactus Hill), and South America (Monte Verde). These sites, were a few thousand years older than Clovis, and they seemed to identify a broader-range lifestyle, more approaching Archaic period hunter-gatherers. One fairly recent discovery appears to link the Western Stemmed Tradition, a stemmed point stone tool complex in the Great Basin and Columbia Plateau to Pre-Clovis and the Pacific Coast Migration Model.

Paleo-Indian Period (about 10,000–8,000 BC)

The Paleoindian Period occurred during the late Pleistocene and the first half of the Early Holocene. Early dates for New world and California settlement are found on the Channel Islands and feature a micro-blade technology that is thought to be similar to the ancient material cultures of Northeastern Asia and perhaps the islands of Japan (PSEGS FSA-Part B Section 4.3; Cultural Resources; CEC, 2013). Isolated fluted projectile points, assignable to the Western Clovis

Tradition have been recovered from the Pinto Basin, McCoy Springs, Ocotillo Wells, Cuyamaca Pass, and the Yuha Desert. All are surface finds, and have no associations with extinct fauna.

Lake Mojave Complex (8,000–6,000 BC)

The Lake Mojave complex, also known as the Western Pluvial Lakes/Western Stemmed Tradition occurred during the second half of the Early Holocene. It is characterized by Great Basin Stemmed Series projectile points (Lake Mojave and Silver Lake types), abundant bifaces, steep-edged unifaces, crescents, and occasional cobble tools and ground stone tools. These artifacts often occur in undated surface contexts. Assemblage composition and site structure suggest highly mobile foragers, often traveling considerable distances. Little reliance upon vegetal resources is evidenced. The value of wetland habitats remains unclear. Lake Mojave lifeways may result from relatively rapidly changing climate and habitats during the Early Holocene. This would have produced unpredictability in resource distribution and abundance, producing a high degree of residential mobility.

Pinto Complex (8,000–3,000 BC)

The Pinto complex spans portions of the Early and Middle Holocene. Toolstone use, based on sites attributed to this complex, focuses upon materials other than obsidian and cryptocrystalline silicate (CCS). Pinto Series points are stemmed with indented bases, and display high levels of reworking. Bifacial and unifacial cores/tools are common. Ground stone tools are moderately to very abundant, indicating greatly increased use of plant resources. Pinto sites occur in a broad range of topographic and environmental settings, especially within remnant pluvial lake basins. Moderate to large numbers of people, practicing a collector subsistence strategy, occupied large residential base camps for prolonged periods. Logistical forays into surrounding resource patches probably were made from these sites.

Deadman Lake Complex (7,500–5,200 BC)

Currently, the Deadman Lake complex appears at this time to be confined to the Twentynine Palms area. Sites usually are surficial and located on old alluvial pediments. Artifacts include small-to-medium-size contracting stemmed or lozenge-shaped points, large concentrations of battered cobbles and core tools, and abundant bifaces, simple flake tools, and ground stone tools. The abundance of cobble tools suggests an emphasis upon plant processing. The Deadman Lake and Pinto complexes may represent two different human populations practicing different seasonal/annual rounds, or Deadman Lake may represent a component of the overall Pinto complex adaptation.

Possible Abandonment (3,000–2,000 BC)

Beginning roughly at this time, conditions in the Mojave Desert were warmer and drier. Few archaeological sites date to this period. This suggests population densities were very low. It is possible some areas were largely abandoned. This period corresponds in part to the latter part of the proposed "Altithermal Abandonment," recognized by some prehistorians as characterizing portions of the Great Basin.

Gypsum Complex (2,000 BC–AD 200)

The Gypsum complex, spanning most of the Early Late Holocene, is characterized by the presence of corner-notched Elko Series points, concave-base Humboldt Series points, and well-shouldered contracting-stemmed Gypsum Series points. Numerous bifaces also occur. Manos and metates are relatively common. During the early portion of the Gypsum complex, settlement-subsistence appears focused near streams. At this time, increased trade and social complexity apparently occurred. Gypsum components are smaller, more abundant, and occur over a more diverse suite of settings than those dating previously. Evidence for ritual activities includes quartz crystals, paint, split-twig animal figurines, and rock art. Gypsum Complex sites are uncommon in the southern and eastern Mojave Desert.

Rose Spring Complex (AD 200–AD 1000)

Cultural systems profoundly changed in the southern California deserts during the Late Late Holocene with the introduction of the bow and arrow, represented by Rosegate Series points. During this time, a major increase in population is thought to have occurred, possibly resulting from a more productive environment and a more efficient hunting technology. Sites often are located near springs, along washes, and sometimes along lakeshores. Intensive occupation is indicated by the presence of wickiups, pit houses, and other types of structures. Well-developed middens have yielded artifact assemblages containing knives, drills, pipes, bone awls, various ground stone tools, marine shell ornaments, and large amounts of obsidian. Obsidian procurement and processing apparently significantly structured settlement-subsistence.

Late Prehistoric Period (AD 1000–AD 1700)

During the Late Prehistoric period, horticultural practices and pottery were introduced (most likely from the Hohokam area in southern Arizona or from northern Mexico), having its greatest impact along the Lower Colorado River. Ceramic artifacts began to appear in the Colorado Desert approximately AD 1000, assigned to the Lowland Patayan (Lower Colorado Buff Ware) and Tizon Brown Ware traditions.

A complex cultural landscape composed of rock art, trails, and geoglyphs developed during the Late Prehistoric period. Trade and exchange were elaborated, with an emphasis on links between coastal southern California and the Southwest. In addition to pottery, artifact assemblages include Desert Series projectile points, shell and steatite beads, and a variety of milling tools. Obsidian use declined significantly, with CCS becoming the dominant toolstone.

Prehistory of the Chuckwalla Valley

In 1984 Singer presented a lithic quarry-oriented prehistoric settlement model for the Chuckwalla Valley and environs. Over 200 prehistoric sites occur in the region. Past peoples inhabiting the area appear to have been very mobile, especially during late prehistoric and early historic times. During early historic times, native peoples inhabited towns/hamlets located along the Colorado River, within the Coachella Valley, and at major desert springs/oases.

The Chuckwalla Valley was a relatively closed resource exploitation zone. It served as an east-west oriented trade route/corridor between the Pacific Ocean and the Colorado River/greater Southwest.

An extensive network of trails is present within the Chuckwalla Valley. Given its orientation and location, the valley may have been neutral territory (i.e., a buffer zone), unclaimed by neighboring native peoples. Quarry sites probably were "owned" by tribal groups. The distribution of particular types of toolstones may have corresponded to a group's territorial boundaries, and a toolstone type may not have occurred beyond the limits of a group's specific territory.

Within the Chuckwalla Valley, prehistoric sites are clustered around springs, wells, and other obvious important features/resources. Sites include villages with cemeteries, occupation sites with and without pottery, large and small concentrations of ceramic sherds and flaked stone tools, rock art sites, rock shelters with perishable items, rock rings/stone circles, geoglyphs (see Geoglyphs, below), and cleared areas, a vast network of trails, markers and shrines, and quarry sites. Possible village locations are present at Palen Lake, Granite Well, and Hayfield Canyon.

A cluster of temporary habitation and special activity (task) sites occurs around a quarry workshop in the Chuckwalla Valley. The Chuckwalla Valley aplite quarry workshop complex probably was used throughout the Holocene. During this period, Chuckwalla Valley most likely was occupied, abandoned, and reoccupied by a succession of ethnic groups. In the Early Holocene (i.e., Lake Mojave complex times), the area may have been relatively densely inhabited. During the Middle Holocene (i.e., Pinto and Gypsum complexes period) it may only have been sporadically visited. The subsequent Late Holocene Rose Spring and Late Prehistoric periods probably witnessed reoccupation of the valley by Yuman and Numic-speaking peoples.

Research Topics

The research topics discussed below include toolstone procurement, ceramic traditions, horticulture, trade and exchange, and cultural landscapes. This discussion of research topics is primarily excerpted from PSPP SA/FEIS Section 3.4 (Cultural Resources, Research Topics; BLM, 2011). Please see that document for full citations.

Toolstone Procurement

The geology of the Colorado Desert provided prehistoric peoples with a variety of lithic materials for artifact production. These included obsidian, cryptocrystalline silicates (chert), crystalline volcanics (basalt, rhyolite), quartz, and plutonic, metamorphic, and sedimentary rocks.

Coso obsidian was the dominant source of obsidian used by Colorado Desert peoples prior to AD 1000. Other obsidian sources, from the southern Mojave Desert, include Bristol Mountains and Devil Peak. Approximately a dozen sources located in Baja California, extreme northwest Sonora, and western Arizona may also have been used. During the last thousand years, however, Obsidian Butte was the principal obsidian used in the Colorado Desert and coastal southern California. Obsidian Butte, located near the southern edge of the Salton Sea, was inaccessible when Lake Cahuilla rose to inundate it (130 feet below sea level). Other factors may have affected access as well. A 2012 study, indicates the buttes may have last erupted more recently, between 940 and 0 BC.

Several topics relating to prehistoric quarrying and tool manufacturing/use have been identified, including: distinction between formal versus the expedient procurement of lithics; reduction strategies and transport of lithic materials; scales of production at quarries where lithic materials were procured to manufacture ground stone tools; and differences in tools/lithic tools by gender.

Bamforth in his work from the early 1990s considers Holocene settlement, raw material, and lithic procurement at several quarry sites in the central Mojave Desert. He suggests that quarry use was conditioned upon mobility strategies, regional quality and abundance of lithic materials, as well as quarry location. Bamforth suggests that an emphasis on transporting prepared cores during the period 2000 BC–AD 500 may have resulted from the formation of relatively large and stable communities in areas with concentrated plant resources.

Singer, in his 1984 report, studied two quarry workshop sites located in Chuckwalla Valley. Core production and reduction from locally available aplite was emphasized. This yielded flakes and bifaces, which appear to have been exported from the quarries for final reduction at other sites. Few formed tools were observed. Those that were present were choppers and scrapers, possibly used to manufacture wooden digging or prying sticks and shafts. The quarry sites appeared to have experienced long-term occupation and use.

Manufacturing efforts appear to have been directed towards production of expedient, rapidly discarded cutting/scraping/pounding/milling tools from locally available lithics. Specialized tool manufacturing included production of sandstone metates along the western side of the Colorado Desert, projectile point (arrow) workshops at seasonal task sites situated around playas, and large quarries at volcanic outcrops within the Lower Colorado and Gila River Valleys, where mortars and pestles were made.

Ceramic Traditions

Schaefer and Laylander, in their discussion from 2007, note that buffware pottery occurring within the Colorado Desert was initially assigned to the Hakataya ceramic series. Subsequent studies, such as that of Waters, place it within the Lowland Patayan Ceramic Tradition. Both typologies are based on surface collections of sherds, with little data resulting from stratigraphic excavations, or associated radiocarbon dates. Schroeder focuses upon details of temper, inclusions, and surface treatment, while Waters emphasizes rim form. Both attempt to define geographic limits of production for each type. Difficulties in applying typology, and problems with stratigraphic integrity, archaeological contexts, and anomalous associated radiocarbon dates, have allowed only gross chronological estimates and have limited identification of manufacturing regions.

In the Salton Basin, some sites dating between about AD 350 and AD 1200 contain pottery. This evidence suggests pottery was not introduced or rarely used prior to about 1000 AD. Earlier dates from the preceding 200 years suggest Lake Cahuilla may have attracted Colorado River peoples (and their pottery). Early ceramic dates from the Colorado Desert correspond closely with the inception of widespread use of Tizon Brownware pottery in the Peninsular Ranges and along the Pacific Coast, although some dates suggest initial introduction of ceramics by AD 800, if not before.

Viewed regionally, pottery use within the Late Prehistoric of the Colorado Desert can be divided into three periods. Patayan I times, about AD 800–AD 1050, witnessed the inception of several ceramic traditions. During Patayan II times, AD 1050–AD 1500, increased local manufacture and use of pottery occurred. Patayan III, AD 1500–AD 1760, saw the introduction of "Colorado Buff" pottery, and the westerly spread of ceramics to coastal southern California. With respect to social and cultural factors governing pottery adoption and use within the Colorado Desert, recent analyses of pottery from the Mojave Desert and surrounding areas provide models focused on

behavioral implications regarding its manufacture and function. One concern has been with determining if ceramic vessels were locally made. Neutron activation analysis and petrographic studies have been used to identify chemical and material signatures. Pottery manufacture does not appear to have been organized at a higher regional level. Instead, pots generally appear to have been locally produced and used, with limited exchange of pots between different groups. Production appears to have been organized at an individual or family level, emphasizing production of largely utilitarian wares.

Pottery from sites in the northern Mojave is characterized by a relatively high number of elemental signatures suggesting higher levels of mobility. In addition to a higher degree of residential mobility, Eerkens suggests people inhabiting the northern Mojave Desert produced a fairly large number of pots. The combination of high mobility and a fairly high level of pottery production is seen as leading to caching pots near lowland wetlands, which were fixed in the landscape, development of pottery attributes promoting fuel consumption, and a high degree of standardization of largely utilitarian ceramics.

Sedentism in the Owens Valley, northeast of the project area, appears to have developed concurrently with, or immediately prior to, an emphasis on resource storage approximately 500 AD. Small seed intensification appears to have occurred about AD 1300–AD 1400, at the time brownware pottery became widely used. Eerkens concludes that social models, such as those suggesting the activities of aggrandizers or the stabilization of long-distance exchange networks, do not explain these developments. The role played by decrease(s) in population-to-resource balance(s), resulting from increased population pressure, remains unclear.

Eerkens suggests the significant increase in small seed use and the advent of brownware pottery around AD 1300–AD 1400 are linked. People focused upon seeds because they could easily be privatized. That is, they could be individually owned and thus would not be subject to unrestricted sharing. Pots were a critical component of small seed intensification, because they generally were individually made and owned and could be used within houses, allowing food preparation and consumption to occur in private. Privatization of small seeds may have resulted from increased population size yielding more potential "freeloaders," new community kinship structures, and the creation of resource surplus.

Horticulture

At the time of initial Euroamerican contact, 240 years ago, native peoples living along the Lower Colorado River and the Colorado Delta were growing a wide variety of domesticates and wild grasses, which provided 30–50 percent of their subsistence economy. Annual flooding of the floodplains along the Colorado rejuvenated the soil and provided enough moisture to sustain crops. Lower Colorado River agriculture is presumed to have begun around 700 AD. It probably spread either from the Hohokam area (to the east), or from northern Mexico (to the southeast).

Horticulture subsequently appears to have spread west from the Colorado River. Desert Tipai peoples practiced floodplain agriculture along the New and Alamo Rivers. They also constructed small dams and ditches along washes to direct irrigation water onto adjacent terraces. Agricultural elements probably reached the Imperial Valley around AD 1700. Seed caches and mythological references to cultigens possibly indicate very late prehistoric adoption of agriculture. However, the caches contained both native and Old World cultigens. Thus it is unclear if agriculture

penetrated west of the Peninsular Ranges in southern California before Euroamerican contact and the sustained influence that came with the establishment of Spanish missions.

Native cultigens may have reached the western Colorado Desert through trade instead of by local production. Within the Colorado Desert, several archaeological sites have ceramic jars or rock-lined cache pits containing food remains of native or Old World plants. Pumpkin seeds occur in human coprolites (fossilized feces) from the Myoma Dunes at the north end of Lake Cahuilla, and also in a ceramic jar from the west shore of Lake Cahuilla, north of the Fish Creek Mountains. The latter dated to AD 1420–1660.

Early to mid-nineteenth-century Cahuilla archaeological sites contain glass beads, flaked glass, domestic animal bones, carbonized maize and tepary beans, and uncarbonized gourds. Abundant evidence exists indicating the Cahuilla practiced irrigated agriculture during the early and mid-nineteenth century. The paucity of macro- and micro-fossil cultigen remains from prehistoric archaeological deposits in Cahuilla territory strongly suggests agriculture did not play a significant role in the Cahuilla economy until the early nineteenth century. Early historic intensification of agriculture may have resulted from final desiccation of Lake Cahuilla, regional population growth, decreased mobility, and acculturation, including introduction of Euroamerican irrigation techniques.

In the Mojave Desert and environs, in the approximate period from AD 1–1200, agriculture first was practiced in southern Nevada and environs as a consequence of the Anasazi Intrusion. Maize, squash, beans, grain amaranth, and sunflowers were grown. Agriculture was practiced along with foraging for wild plants and animals. Fields probably were irrigated in some manner. Agriculture appears to have intensified over time.

The Owens Valley Paiute were Great Basin Numic-speaking horticulturalists. Ditch and surface irrigation of blue dicks (*Brodiaea capitata*), yellow nut grass (*Cyperus esculentus*), and spikerush (*Eleocharis sp.*), was practiced. This most likely developed during late prehistoric times, possibly triggered by increased population pressure resulting from climatic change and/or immigration.

Yohe notes aboriginal cultigens, such as melons, squash, and beans, were present at two rockshelters dating to the late nineteenth or early twentieth century in Death Valley. Fowler details garden horticulture among the Southern Paiute and Panamint and Timbisha Shoshone. Stream-irrigated gardens were cultivated, in which corn, beans, squash, sunflowers, and amaranth were grown. These groups also planted gardens near springs, had communal fields with irrigation ditches, and unirrigated stream-bank garden plots. Various land management practices were employed, including intentional burning, clearing, pruning, and coppicing, transplanting and cultivation, and cleaning of water sources.

Winter and Hogan note that during protohistoric times, agriculture was practiced by the southern California/Nevada Chemehuevi and Ash Meadows, Pahrump, Las Vegas, and Moapa Southern Paiute bands. Among the crops grown were corn, beans, squash, and sunflowers. Forms of plant husbandry directed towards nondomesticates included burning to encourage growth of new plants, broadcast seed sowing, and irrigation of wild stands of bulb and seed plants. These practices are thought to have begun prehistorically, continuing and possibly expanding during early historic times. Wallace suggests Native American agriculture in the Mojave region was exclusively a historic-period phenomenon.

Trade and Exchange

As Schaefer and Laylander note, prehistoric and ethnohistoric Colorado Desert peoples had a highly developed network of connections linking locations within and beyond the region. High mobility produced considerable cross-cultural interaction and integration in spite of frequent open aggression and warfare between different groups. This integration and interaction occurred between mobile hunter-gatherers and sedentary horticultural peoples. They are archaeologically manifested by the spatial distribution of site types, rock art, artifacts (especially ceramics and shell ornaments), and toolstones (especially obsidian).

Archaeologists monitor the dynamics of prehistoric trade in the Colorado Desert by analysis of the distributions of artifacts made from various lithics, shell beads and ornaments, and ceramic types and composition. As previously stated, with respect to lithics, obsidian from Obsidian Butte is fairly commonly represented in sites located within montane and coastal southern California. Obsidian from sources in northern Baja California may have been routed via the Colorado Desert to coastal southern California sites. Wonderstone from the Rainbow Rock source is present in western San Diego County and the northern Coachella Valley.

Material for steatite artifacts found in Colorado Desert sites probably comes from sources in the Peninsular Ranges. Material for argillite artifacts may be from a central Arizona source.

Artifacts made from shellfish species inhabiting the northern Sea of Cortez occur in coastal southern California and the Great Basin and may have been traded through the Colorado Desert. Shells from southern California coastal species have been found at a number of Colorado Desert sites and those in the Southwest. These artifacts may have resulted from direct procurement of shells, or exchange. At the Elmore site, associated with the protohistoric recession of Lake Cahuilla, shell debitage indicates local manufacture of shell beads and ornaments. In the Coachella Valley, shell artifacts may reflect close ties to peoples living along the Santa Barbara Channel.

A cache of Lower Colorado Buffware (i.e., Patayan) anthropomorphic figures found in an Orange County site indicates interregional connections. These also are suggested by the frequency of Lower Colorado Buffware (i.e., Patayan/Hakataya) pottery throughout the Colorado Desert. However, its use occurred among a number of prehistoric peoples practicing divergent settlement and subsistence patterns. Consequently, little effort has been made to refine or apply the Patayan tradition as an integrative model.

On a local level, Plymale-Schneeberger examined pottery from three sites in Riverside County. Petrographic and geochemical analyses allowed quantitative distinction between Tizon Brown Ware and Lower Colorado Buff Ware. The study concluded that Brown Ware was locally produced while Buff Ware was imported. Seymour and Warren examined proportions of Tizon Brown Ware and Lower Colorado Buff Ware present at sites in Joshua Tree National Park and noted correspondence of pottery types with approximate boundaries of territories occupied by ethnohistorically known native peoples (that is, Cahuilla, Serrano, Chemehuevi).

Davis and Sample note that a considerable degree of historic-period trade between Native Americans occurred within and across the Colorado Desert. Trade networks across the Colorado Desert extended to the Yokuts and Chumash. Native peoples living along the Colorado River received and reciprocated goods from many groups living to the west.

Culturally Sensitive Areas

Recent ethnographic studies confirm that important kinds of cultural features in the project vicinity include trail systems, places used for ceremonies and worship, places where plants are gathered for use for traditional medicines and in ceremonies, places where artisan materials are found, and places and features of traditional subsistence systems, such as plant gathering and hunting areas (Tennyson et al., 2017).

3.4.2.6 Ethnographic Background

Ethnography fulfills a supporting role for other anthropological disciplines as well as contributing on its own merits. Ethnography provides a supporting role to the discipline of archaeology by providing a cultural and historic context for understanding the people that are associated with the material remains of the past. By understanding the cultural milieu in which archaeological sites and artifacts were and still are manufactured, utilized, or cherished, this additional information provides greater understanding for identification efforts, making significance determinations per the NHPA or CEQA; eligibility determinations for the NRHP or the CRHR; and for assessing if and how artifacts are subject to other cultural resource laws, such as the NAGPRA and the ARPA.

Ethnography has merits of its own by providing information concerning ethnographic resources that encompass physical sites, places, areas, or elements of a site, place or area. Historic property types with overlap and affinity with ethnographic resources are referred to as cultural landscapes, traditional cultural properties, Sacred Sites, and heritage resources, or historical resources that are areas, places, or sites. There is notable overlap in terminology when referring to ethnographic resources. Studies that focus on specific ethnographic resource types also take on names such as ethno-geography, ethno-botany, ethno-zoology, ethno-semantics, ethno-musicology, etc. In general, the ethnographic endeavor attempts to minimize human conflict by facilitating iterative cross cultural understandings and, by extension, self-awareness and informed consideration of others.

Ethno-Historical Background

Currently, the region in which the project site is located is believed to have been occupied at various times by the Chemehuevi, Serrano, Cahuilla, Mojave, Quechan, Maricopa, and Halchidhoma.

Singer concluded the Chuckwalla Valley was not clearly assigned to any Native American group on maps depicting group territories. Following Johnston and Johnston (1957), Singer observed that the west end of the Chuckwalla Valley was near the intersecting boundaries of Cahuilla-Serrano-Chemehuevi territory. Possibly before 800 BC, the Chemehuevi may have expanded into Serrano territory, occupying the Chuckwalla Valley. No physical evidence suggested that the Cahuilla occupied the area. Given its east-west orientation and location, however, the Chuckwalla Valley may have been neutral territory, occupied by no Native American group in particular, which served as an east-west trade and travel route.

The following discussion of the ethno-historical background is primarily excerpted from PSPP SA/FEIS Section 3.4 (Cultural Resources, Ethnographic Background; BLM, 2011). Please see that document for full citations.

The Cahuilla

A wealth of information exists regarding traditional and historic Cahuilla society and culture (please see PSPP SA/FEIS Section 3.4 for full citations). The Cahuilla language, divided into Desert, Pass, and Mountain dialects, has been assigned to the Cupan subfamily of the Takic branch of the Uto-Aztecan linguistic family.

Territory traditionally claimed by the Cahuilla was topographically complex, including mountain ranges, passes, canyons, valleys, and desert. Bean described it as, "...from the summit of the San Bernardino Mountains in the north to Borrego Springs and the Chocolate Mountains in the south, a portion of the Colorado Desert west of Orocopia Mountain to the east, and the San Jacinto Plain near Riverside and the eastern slopes of Palomar Mountain to the west." The natural boundaries of the desert, mountains, hills, and plains separated the Cahuilla from surrounding Native American groups. The Cahuilla interacted with surrounding peoples via intermarriage, ritual, trade, and war. The Cahuilla, Cupeño, Gabrielino, Serrano, and Luiseño shared common linguistic and cultural traditions. The neighboring Cupeño were closest linguistically to the Cahuilla.

Cahuilla villages usually were located in canyons or on alluvial fans near water and food patches. The area immediately around a village was owned in common by a lineage. Other lands were divided into tracts owned by clans, families, and individuals. Numerous sacred sites with rock art were associated with each village. Trail networks used for hunting, trading, and social visiting connected villages. Trading was a prevalent economic activity. Some Cahuilla were trading specialists. The Cahuilla went as far west as the Channel Islands and east to the Gila River to trade.

Men hunted deer, mountain sheep, pronghorn, rabbits, rodents, and birds. This game was stalked/pursued/trapped by individuals and communal hunting groups. Blinds, pits, bows and arrows, throwing sticks, nets, snares, and traps were used to procure game. Communal hunts using fire drives sometimes occurred.

The Cahuilla had access to an immense variety of plant resources present within a diverse suite of habitats. Several hundred plant species were used for food, manufacture, and medicine. Acorns, mesquite and screw beans, pinyon nuts, and cactus fruits were the most important plant foods. They were supplemented by a host of seeds, tubers, roots, bulbs, fruits and berries, and greens. Corn, beans, squash, and melons were cultivated. Over 200 species of plants were used as medicines.

Structures varied in size from brush structures to dome-shaped or rectangular houses, 15–20 feet long, and ceremonial houses. The chief's house usually was the largest. Used for many social, ceremonial, and religious functions, it was located near a good water source. It generally was next to the ceremonial house, which was used for rituals, curing, and recreational activities. Other structures included a communal men's sweathouse and granaries.

Mortars and pestles, manos and metates, pottery, and baskets were used to process and prepare plant and animal foods. Cahuilla material culture included a variety of decorated and plain baskets; painted/incised pottery; bows, arrows, and other hunting-related equipment; clothing, sandals, and blankets; ceremonial and ritual costumes and regalia; and cordage, rope, and mats. Games and music were important social and ritual activities for the Cahuilla.

The Cahuilla had named clans, composed of 3–10 lineages, with distinct dialects, common genitors, and a founding lineage. Each lineage owned particular lands, stories, songs, and anecdotes. Each lineage occupied a village and controlled specific resource areas. All clan members jointly owned clan territory. Territory ownership was established by marked boundaries (rock art, geographic features), and oral tradition. Most of a clan's territory was open to all Cahuilla. Kinship rules determined rights to assets and responsibilities within a lineage. Each lineage cooperated in defense, large-scale subsistence activities, and ritual performance. The founding lineage within a clan often owned the office of ceremonial leader, the ceremonial house, and sacred bundle. Artifacts and equipment used in rituals and subsistence was owned by individuals and could be sold or loaned.

The office of lineage leader usually passed from father to eldest son. He was responsible for correct performance of rituals, care of the sacred bundle, and maintenance of the ceremonial house. The lineage leader also determined when and where people could gather and hunt, administered first-fruits rites, and stored food and goods. He knew boundaries and ownership rights, resolving conflict with binding decisions. The lineage leader met with other lineage leaders concerning various issues. He was assisted in his duties by a hereditary official responsible for arranging details for performance of rituals. Other functionaries included song leaders/ceremonialists, assisted by singers and dancers.

Laws were enforced by ritual, stories, anecdotes, and direct action. Supernatural and direct sanctions were used. Tradition provided authority. The past was the referent for the present and future. Old age provided access to privilege, power, and honor. Reciprocity was a significant expectation. Doing things slowly, deliberatively, and thoughtfully was stressed. Integrity and dependability in personal relations were valued. Secrecy and caution were exercised in dealing with knowledge.

Armed conflict occurred after all other efforts to resolve things had failed. A lineage leader and/or skillful warrior lead a temporary war party. Community rituals were held before and after a fight, which usually involved ambush.

Ritual and ceremony were a constant factor in Cahuilla society. Some ceremonies were scheduled and routine, while others were sporadic and situational. The most important ceremonies were the annual mourning ceremony, the eagle ceremony, rites of passage (especially those associated with birth, naming, puberty, and marriage), status changes of adults, and rituals directed towards subsistence resources. The main focus was upon performance of cosmologically oriented song cycles, which placed the Cahuilla universe in perspective, reaffirming the relationship(s) of the Cahuilla to the sacred past, present, to one another, and to all things.

The Serrano

The Serrano shared many traits and artifacts with the Cahuilla, discussed above. The Serrano spoke a language belonging to the Serean Group of the Takic subfamily of the Uto-Aztecan family.

It is nearly impossible to assign definite boundaries to Serrano territory. Territory traditionally claimed by the Serrano included the San Bernardino Mountains east of Cajon Pass, lands at the base and north of the San Bernardinos in the desert near Victorville, and territory extending east in the desert to Twentynine Palms and south to, and including, the Yucaipa Valley.

The Serrano occupied small village-hamlets located mainly in the foothills near water sources. Others were at higher elevations in coniferous forest, or in the desert. The availability of water was a critical determinant of the nature, duration, and distribution of Serrano settlements.

Women gathered, and men hunted and occasionally fished. Topography, elevations, and biota present within the Serrano territory varied greatly. Primary plant foods varied with locality. In the foothills, they included acorns and pinyon nuts. In the desert, honey mesquite, pinyon, yucca roots, and cactus fruits were staples. In both areas they were supplemented by a variety of roots, bulbs, shoots, and seeds, especially chia. Among primary game animals were deer, mountain sheep, pronghorn, rabbits, rodents, and quail. Large game was hunted with bows and arrows. Small game was taken with throwing sticks, traps, snares, and deadfalls. Meat was cooked in earth ovens. Meat and plant foods were parched or boiled in baskets. Plant foods were ground, pounded, or pulverized in mortars and pestles or with manos and metates. Processed meat and plant foods were dried and stored. Occasional communal deer and rabbit hunts were held. Communal acorn, pine nut, and mesquite gathering expeditions took place. These communal activities involved several lineages under a lineage leader's authority.

Serrano houses were circular, domed, individual family dwellings, with willow frames and tule thatching. They were occupied by a husband and wife along with their children, and often other kin. Houses were mainly used for sleeping and storage. Most daily activities occurred outside, often in the shade of a ramada (a flat-roofed, open-sided shade structure) or other sun cover.

Settlements usually had a large ceremonial house where the lineage leader and his family lived. It was the social and religious center for each lineage/lineage set. The latter was two or more lineages linked by marriage, economic reciprocity, and ritual participation. Other structures included semi-subterranean, earth-covered sweathouses located near water, and granaries.

Serrano material culture was very similar to that of the Cahuilla. Stone, wood, bone, plant fibers, and shell were used to make a variety of artifacts. These included highly decorated baskets, pottery, rabbit skin blankets, bone awls, bows and arrows, arrow straighteners, fire drills, stone pipes, musical instruments, feathered costumes, mats, bags, storage pouches, cordage, and nets.

The clan was the largest autonomous landholding and political unit. No pan-tribal union between clans existed. Clans were aligned through economic, marital, and ceremonial reciprocity. Serrano clans often were allied with Cahuilla clans and Chemehuevi groups. The core of a clan was the linage. A lineage included all men recognizing descent from a common ancestor, their wives, and their descendants. Serrano lineages were autonomous and localized, each occupying and using defined, favored territories. A lineage rarely claimed territory at a distance from its home base.

The head of a clan was a ceremonial and religious leader. He also determined where and when people could hunt and gather. Clan leadership was passed down from father to son. The clan leader was assisted by a hereditary ceremonial official, from a different clan. This official held ceremonial paraphernalia (the sacred bundle), notified people about ceremonies, and handled ceremonial logistics.

Serrano shamans were primarily healers who acquired their powers through dreaming. A shaman cured illness by sucking it out of the sick person and by the administration of herbal medicines. Various phases of an individual's' life cycle were occasions for ceremonies. After a woman gave

birth, the mother and baby were "roasted," and a feast held. Differing puberty ceremonies were held for boys (datura ingestion used in a structured ceremonial vision quest) and girls ("pit roasting," ingestion of bitter herbs, dietary restrictions, instruction on how to be good wives). The dead were cremated, and a memorial service was held. During the annual seven-day mourning ceremony, the sacred bundle was displayed, the eagle-killing ceremony took place, a naming ceremony for all those born during the preceding year was held, images were made and burned of those who had died in the previous year, and the eagle dance was performed.

The Chemehuevi

The Chemehuevi spoke a language belonging to the Southern Group of the Numic subfamily of the Uto-Aztecan family. Many traits characterizing Chemehuevi culture are very similar or identical to those of the Mojave, discussed below. Several probable Quechan traits also were noted for the Chemehuevi.

For the territory traditionally claimed by the Chemehuevi, the Colorado River formed the eastern boundary south to the Palo Verde Mountains. The boundary then ran northwest, passing east of the Ironwood Mountains, crossing the Maria Mountains, paralleling the Iron Mountains, and then running between Old Woman Mountain and Cadiz Dry Lake. Mojave territory lay to the northeast, and that of the Las Vegas group of Southern Paiute to the north-northwest.

The Chemehuevi lacked any form of overall "tribal" organization. Anthropologists refer to territorial subdivisions among the Chemehuevi as "bands." Each band was composed of a small number of camps/communities/villages. Bands most likely corresponded to economic clusters. Each group was a geographic unit, associated with a definite territory. In general, each band was economically self-sufficient.

In general, Chemehuevi settlement was mobile and scattered, with residence recurring within a fixed area. Houses were closely grouped. Their occupants usually were related by blood or marriage. Settlement size ranged from 1–2 households up to 10–20. Springs often were inherited private property. Married siblings often camped at the same spring.

The Chemehuevi traveled widely. They had amicable contact with the Serrano, Cahuilla, Quechan/Yumans, and other Native American groups. The Chemehuevi sometimes joined with the Mojave/Quechan to fight the Cocopa/Halchidhoma. The Chemehuevi often crossed the Colorado River and hunted deer in Quechan, Yavapai, and Western Walapai territory. They also traded, intermarried, and competed in games with the Yavapai. To the west, the Chemehuevi

hunted in the Tehachapi area and went to the Pacific Coast along the Santa Barbara Channel to get abalone shell. Sometimes, a party of 8–10 Chemehuevi men joined men from neighboring groups to make a two-month journey to the Hopi villages (in what is now New Mexico) to trade.

The Chemehuevi apparently did not eat fish, but bighorn sheep, deer, pronghorn antelope, and desert tortoise were among the animal food resources they used. Plant foods in this region included pinyon nuts and mescal. Men inherited rights to hunt large game within certain tracts, defined in songs using geographic references. Women gathered a great variety of plant foods, which were more important in the Chemehuevi diet than game. In addition to pinyon nuts and mescal, agave

and seeds were staples. Along the Colorado River, the Chemehuevi practiced floodplain agriculture. They grew corn, squash, gourds, beans, sunflowers, amaranth, winter wheat, grasses, and devil's claw using techniques similar to Mojave agricultural practices (see below).

Chemehuevi winter houses were conical/sub-conical structures. They also built earth-covered houses without a front wall, similar to those constructed by the Mojave. During the summer, many Chemehuevi lived outside, often building and occupying armadas and windbreaks.

With respect to material culture, Chemehuevi baskets and cradles were made from plant fibers. Plant fibers also provided materials for rope, string, and cordage nets. Pottery, which followed Mojave patterns and styles, included cooking pots, water jars, seed germination and storage pots, spoons/scoops, and large pots for ferrying children across the Colorado River. Watercraft included log rafts and reed balsas. Clothing consisted of double skin or fiber aprons and sandals for men and women. The Chemehuevi commonly had pierced ears and wore body paint.

Monogamy was the commonest form of marriage among the Chemehuevi, but some men had more than one wife. Women gave birth in a special enclosure, followed by a 30-day period of seclusion for mother, father, and child. Puberty rites for boys and girls were held, with the former focused on acquisition of hunting skills. Cremation of the dead was traditional, replaced by in-ground burial in the historic period.

In general, no central political control existed. Territorial boundaries were not rigid, and some bands were named, while others were not. The basic social and economic unit was the nuclear family and could include other close kin. Groups of individual households moved together on hunting and gathering trips, returning to the same spring or agricultural site. Most large bands had a headman whose leadership was more advisory than authoritative. He was usually succeeded by his eldest son.

The principal role of Chemehuevi shamans was curing illness. They acquired their healing powers through dreams rather than through the use of datura or a trance. Chemehuevi families held a mourning ceremony ("cry"), with which several speeches and songs were associated, within the year after the death of a relative. The "cry" was sponsored by the family and included the ceremonial burning of material goods.

The Chemehuevi had deer and mountain sheep song-dances, held for entertainment and hunting success. The Chemehuevi had other songs, as well: bird, salt, quail, and funeral songs. During winter evenings, men narrated a rich body of traditional stories and myths. These performances often included mimicry, song, and audience participation. Oral tradition related people to social norms, their territories, and to the subsistence resources present within them.

The Mojave

Information regarding the traditional lifeways of the Mojave has mainly been drawn from the accounts of early explorers and/or fur trappers who were among the first to encounter native groups, as well as from the later ethnographic accounts of anthropologists, usually well after the influences of Euro-American contact had begun to alter traditional ways of life.

The name Mojave is a variation on the name Hamakhava, which is what the tribal people called themselves. The Mojave language is classified into the Yuman subfamily of the Hokan language family. The Mojave were the northernmost and largest tribe of the River and Delta Yumans, who comprised a series of agricultural tribes that occupied the lower Colorado and Gila Rivers. The traditional ethnographic territory attributed to the Mojave includes the Mojave, Chemehuevi, and Colorado River Valleys along the lower Colorado River at the intersection of the borders of Arizona, Nevada, and California. In pre-contact times, Mojave tribal settlement is reported to have centered in the Mojave Valley where their population densities were observed to be the greatest.

The Colorado River served as an oasis in the otherwise harsh, dry environment that surrounded the river valleys. The spring overflow of the river, which spread gently over the bottomlands, left behind a rich silt deposit in its recession. It is within these bottomlands that the Mojave cultivated crops, which served as the foundation of their subsistence economy. Their agricultural methods were relatively simple, consisting of planting seeds on the richly silted floodplains and allowing their crops to mature with a minimum of maintenance or effort. Corn was the primary crop, but several varieties of tepary beans, pumpkins, melons, and other plants were also grown. Once harvested, the portions of the harvest that were not immediately consumed were dried in the sun and stored in large basketry granaries. The Mojave supplemented their diet mainly by gathering wild plants and by fishing, which served as their principle source of meat. Hunting played a minor role in the Mojave subsistence economy.

Technology of the Mojave was relatively simple, and tools were reported to have been crafted to meet only the minimum requirements of utility. According to Kroeber, the farming implements consisted of only two items: a heavy wooden staff or digging stick for planting and a spatulate wooden hoe-like implement, whose square edge was pushed flat over the ground to control weeds. Metates, consisting of a rectangular block of stone, were used for grinding corn, wheat, and beans, and both stone and wooden pestles, as well as stone mortars, were also used for food processing. Fish were commonly taken with seines, large basketry scoops, sieves, dip nets, and weirs. The bow and arrow and cactus-spine fish hooks were also used for fishing. Mojave basketry was crudely woven, and their pottery was basic and utilitarian. Since hunting was of relatively little significance to the Mojave, hunting devices and techniques were not well developed, consisting mainly of snares, nets, bow and arrow, or curved throwing sticks.

Mojave political and social organization was very informal, and no one individual or group had significant authority over another. Despite the Mojave's loose division into bands or local groups that were spread out over great distances, their cohesion as a tribe was very strong, and they considered themselves as one people occupying a nation with a well-defined territory.

The nuclear family was the basic unit of economic and social cooperation, although the extended family constituted the core of a settlement. Rather than large centralized villages, Mojave settlements were widely distributed along the riverbanks in close proximity to arable lands. Houses were situated on low rises above the floodplain and often separated by as much as a mile or two. During most of the year, the Mojave slept under ramadas; however, during the colder season, they occupied more substantial, semi-subterranean, rectangular earth-covered houses.

Warfare was a dominant strain in River Yuman culture, and the Mojave's strong tribal unity served them well in times of warfare. They apparently traveled great distances to do battle, and their

principle weapons were bows and arrows and hard wood clubs. According to Kroeber, their main motivation was sheer curiosity, as they liked to see other lands and were eager to know the manners of other peoples, but were not heavily interested in trade.

The Mojave were culturally similar to the other River and Delta Yumans: the Quechan, Halchidhoma, Maricopa, and Cocopa. During ethnohistoric times, the Quechan were considered friends and allies of the Mojave, while the Halchidhoma, Maricopa, and Cocopa were considered to be enemies with whom the Mojave engaged in warfare. The Mojave were also friendly with the Upland Yuman tribes of the Yavapai and Walapai of western Arizona, although relations with the Walapai were somewhat mixed.

One of the most important rituals observed by the Mojave centered on death, namely the funeral and subsequent commemorative mourning ceremony. As soon as possible after death, the deceased was cremated upon a funeral pyre along with all of his or her possessions. The house and granary of the deceased were also burned. It was believed that by burning, these things would be transmitted to the land of the dead along with the soul of the deceased.

Due to their relatively remote location inland, the Mojave maintained their independence throughout the Spanish period of the sixteenth and seventeenth centuries and were only rarely visited by explorers during that time. The few Spanish accounts of encounters with the Mojave provided similar descriptions of Mojave lifeways as those reported later by ethnographers. It is believed that the ancestors of the Mojave resided in the area for at least 1000 years and the mode of life in prehistoric times is thought to be similar to that observed historically.

The Quechan/Yuma

Quechan is a variation on the names Kwichyan or Kuchiana, which are the names the tribe called themselves, but this group was also commonly known as the Yuma. The Quechan are among the Yuman-speaking tribes who occupied the lower Colorado River where it forms the boundary between California and Arizona. According to Kroeber, the Quechan and their neighbors to the north, the Mojave, appear to be virtually identical in terms of their agriculture, manufactures, clothing, hairdress, houses, warfare, and sense of tribal unity.

The territory traditionally associated with the Quechan, now divided between the states of California and Arizona, is centered around the confluence of the Colorado and the Gila Rivers, extending several miles north and south along the Colorado and east along the Gila. Quechan legend tells of a southward migration of their ancestors from a sacred mountain; however, it is not known when the ancestors of the Quechan first settled near the confluence. No group of this name was mentioned in the account of Hernando de Alarcón when he passed through the area during an expedition in 1540, and the first reference to this group did not appear in Spanish documents until the late seventeenth century, at which time they were settled around the river confluence area.

In an environment otherwise surrounded by dry desert terrain, the subsistence economy of the Quechan focused on riverine agriculture, which was one of the main sources of food for the tribe. Crops were cultivated in the richly silted river bottomlands following the recession of the spring floods and provided a relatively high yield in exchange for relatively low labor output. The main cultivated crops included corn, tepary beans, pumpkins, and gourds. In post-contact times, watermelons, black-eyed peas, muskmelons, and wheat were introduced by Europeans and brought

into cultivation by the Quechan, as well. The Quechan also relied on the gathering of wild foods, the most important of which were mesquite and screw-bean pods, although a variety of other wild plants were also collected. Fishing was of minor importance, as there were few species in the lower Colorado River suitable for eating. Among the fish sought were the humpback, white salmon, and boneytail, which were sometimes caught with unfeathered arrows or cactus spine hooks, but more often taken with traps and nets during floods. Given the low incidence of game available in the area, hunting played a minor role in the overall subsistence economy.

Like the Mojave, Quechan tribal settlements, or rancherias, consisted of extended family groups that were widely dispersed along the riverbanks. Settlements shifted throughout the year, dispersing into smaller groups along the bottomlands during the spring and summer farming seasons and reconvening into larger groups on higher ground, away from the river, during the winter and spring flood periods. The geographic dispersion of the households within the rancheria groups was closely correlated with the condition of the rivers and the technology of riverine agriculture. The warm climate and scant precipitation made substantial housing unnecessary for most of the year, so most people made use of ramadas or dome-shaped arrowweed shelters. Each rancheria typically had one or two large, earth-covered shelters for the rancheria leaders' families, but these shelters also accommodated small crowds during colder weather.

Much like the Mojave, Quechan technology lacked technical or decorative elaboration beyond the demands of minimal utility. Quechan bows did not feature "backed" construction and so lacked power, and their arrows were frequently untipped, so the bow and arrow's range was short and the penetrating power weak. Sharpened staffs served as digging sticks or, when cut in longer lengths, as weapons.

In terms of property, there were no marked gradations in wealth, and social pressure favored the sharing of one's abundance with others who were less fortunate. Land ownership was informal, and people did not show much interest in the accumulation of material goods beyond the immediate needs of the family group or the surplus maintained by local leaders for redistribution to needy families within their rancheria. Lands were not inherited by family members upon the death of an individual; rather, the lands of the deceased were abandoned, and replacement plots were sought by the family members.

Despite the wide distribution of settlements, the Quechan had a strong sense of tribal unity. As with their neighbors and allies, the Mojave, warfare played a major role in Quechan culture, and it was during times of warfare that tribal unity was most prevalent among the individual settlements. Their major enemies were the Cocopa and the Maricopa, and they often allied themselves with the Mojave in strikes against common enemies. Bee suggests that warfare among the riverine peoples may have increased in scale and intensity during the eighteenth and early nineteenth centuries due to new economic incentives, such as the opportunity to trade captives to the Spaniards or to other tribes for horses or goods.

Quechan social and political organization, like that of the Mojave, appears to have been very informal, with no one individual or group having significant authority over others. Two types of tribal leadership have been reported for the Quechan, one for civil affairs and the other for war, but it is questionable how influential these leadership roles may have been. Each rancheria had

one or more headmen, but their authority was contingent upon public support and continued demonstration of competence. According to Bee, important matters at either the tribal or the rancheria level were always decided by consensus, sometimes after long debates dominated by the better and more forceful speaker.

Another important aspect of Quechan society that was shared with the Mojave concerns the commemoration of the dead, which was an elaborate ceremony involving wailing and the destruction of property and ritual paraphernalia. All possessions of the deceased, including the family home, were destroyed or given away.

The Maricopa and the Halchidhoma

Ethnographic information for the Maricopa and Halchidhoma is meager in comparison to the Mojave and the Quechan. The Halchidhoma first entered written history in the early seventeenth century during a Spanish expedition on the lower Colorado River, below its junction with the Gila River. When later encountered by missionary-explorer Eusebio Francisco Kino in the early eighteenth century, the Halchidhoma (or "Alchedoma," as they were referred to by Kino) had moved farther north up the Colorado beyond the Gila. The traditional territory attributed to the Halchidhoma lay along the lower Colorado between the Mojave and the Quechan territories. They were later driven from that area under pressure from their hostile Mojave and Quechan neighbors and moved to the middle Gila River area, where some merged with the Maricopa.

The term Maricopa refers to the Yuman-speaking groups who in the early nineteenth century occupied the area along or near the Gila River and its tributaries (in what is now southern Arizona), but who earlier had occupied the lower Colorado River area. The Maricopa language is closely related to Quechan and Mojave, all three of which are classified as members of the River branch of the Yuman language family. The Maricopa call themselves pi•pa•s, "the people." The name Maricopa is an English abbreviation of the name Cocomaricopa, first used by Eusebio Kino in the late seventeenth century.

The Maricopa, who by the early nineteenth century included remnant tribes of the Halyikwamai, Kahwan, Halchidhoma, and Kavelchadom, share common origins and are culturally similar to both the Quechan and the Mojave, the most prominent traits of which included floodwater agriculture and cremation of the dead. Their material culture was also essentially the same. The Colorado River Maricopa lived in low, rectangular, earth-covered houses, but the Maricopa of the Gila River had adopted the round houses of their Piman neighbors. Technology was of little interest to the River Yumans and remained at a low level of development.

Tribes Affiliated with the Project Area

The following section is primarily based on the PSEGS FSA Section 4.3 (Cultural Resources, Ethnographic Background, pages 4.3-24 through 4.3-32; CEC, 2013). Please see that document for full citations. This section updates the information presented in the PSPP SA/FEIS (BLM, 2011).

Southern Paiute

The Southern Paiute are an Indian population that resided within an expansive portion of the Great Basin. Their territory formed a crescent extending northwest from the vicinity of present-day Blythe,

California, along the Colorado River to the Amargosa Range. From the Amargosa Range, Southern Paiute territory extended northeast into southern Nevada, between the White River and Virgin River watersheds. The northern edge of Southern Paiute territory reached the southwestern part of present-day Utah. This group also held land in northern Arizona, north of and including the northern band of the Colorado River. The eastern boundary was marked by the southeastern flank of the Rocky Mountains, just east of the Colorado-San Juan River confluence. The Chemehuevi are the only subgroup of Southern Paiute that resided in the project vicinity, along the lower Colorado River between Needles and Blythe. Today there are several groups of Chemehuevi, those who live at the Chemehuevi Indian Reservation near Parker, those who live at the Colorado River Indian Reservation, and those who reside at the reservations of the Twenty-Nine Palms Band of Mission Indians, Augustine Band of Mission Indians, and Torres Martinez Mission Band of Indians.

Chemehuevi Indian Tribe. The Chemehuevi Tribe is a federally recognized tribe and the official name is the Chemehuevi Indian Tribe of the Chemehuevi Indian Reservation. Rather than remain on the Fort Mojave Reservation near Needles, California where they had been forced to live with some of the Mojave, the Chemehuevi requested that the federal government establish their home in their traditional area, the Chemehuevi Valley. They remained there and at Beaver Lake and Cottonwood Island until dam construction forced them out in 1929. The Chemehuevi Reservation was founded on the Colorado River in Chemehuevi Valley north of Parker, Arizona. In 1935, Congress authorized the Metropolitan Water District to obtain as much reservation land as needed to create Parker Dam, which ultimately caused the inundation of 8,000 acres of tribal lands in 1940. In the 1960s, some Chemehuevi members from the Colorado River Indian Reservation joined with off-reservation tribal members in reorganizing the Chemehuevi Tribe and reactivating the Chemehuevi Reservation. The date of election of the Chemehuevi Indian Tribe's constitution was February 14, 1970. The current reservation encompasses 32,000 acres of trust land with 30 miles of Colorado River frontage. The tribe is based in Havasu Lake, California. An Executive Committee comprising a chairperson, vice chairpersons, and secretary treasurer oversees daily tribal operations and enterprises. The tribe also has a nine-person tribal council and a tribal court (active since 1996). The tribe's Cultural Center seeks to educate its younger generations about contemporary and traditional Chemehuevi life. The tribe operates the Havasu Landing Resort & Casino.

Twenty-Nine Palms Band of Mission Indians. The Twenty-Nine Palms Band of Mission Indians reservation has two pieces: one south of the Oasis of Mara in the city of Twentynine Palms, and one adjacent to the Cabazon Reservation in Indio. The Oasis of Mara was a Serrano residence as early as 1852, although groups were undoubtedly living at the oasis prior to the mid-nineteenth century. The Chemehuevi moved to the oasis after a war with the Mohave on the Colorado River in 1867. The water from the oasis provided sufficient water for horticulture, and hunting and gathering around the oasis was productive until the late 19th century when Euro-Americans settled in the area and began depleting the resources upon which the Chemehuevi were dependent. Eventually, the families who lived there, the Ramirez, Pine and Mike families spent part of their time following their traditional patterns, and the other working wage labor jobs in the Coachella Valley.

The Chemehuevi received a patent in 1895 for a reservation near the oasis, but the 160-acre reservation was located southwest of the oasis in an area with no surface water and no Native Americans established any residences. Most of those Chemehuevi who lived in the Twentynine Palms area in 1908 moved to the Morongo Reservation in Banning when Indian children were forced to attend

the St. Boniface Indian School in Banning. The Twenty-Nine Palms band retained an identity separate from those Chemehuevi at the reservation on the Colorado River and on other reservations in the Coachella Valley, but in 1910 they were encouraged to live at the Cabazon Reservation in Indio. Conflict between the Cahuilla and Chemehuevi at Cabazon led most of them to leave. They either moved to the Twenty-Nine Palms reservation, with the Paiutes in Nevada, the Chemehuevi near Parker, the Luiseno and Cahuilla at Soboba reservation, the Agua Caliente Reservation or one of the other reservations in California. In the 1970s a 240-acre parcel of the Cabazon Reservation was allotted to the Twenty-Nine Palms band.

Currently, the reservation maintains a total of 400 acres, 160 acres in Twentynine Palms and 240 acres in Indio. The tribe is based in Coachella, California. The Tribal Council consists of all adults 18 years of age or older, and among the Tribal Council; a chairperson and secretary/treasurer is elected. The tribe employs a Tribal Historic Preservation Officer who administers the tribe's cultural and heritage programs. The tribe also maintains the Spotlight 29 Casino in Coachella, and will be opening the Tortoise Rock Casino in Twentynine Palms in the fall of 2013.

Mohave

Currently, the Mohave Indians are members of one of two tribes, (1) former residents of the Fort Mojave Reservation in Arizona, now residing in Needles, and (2) Mohave of the Colorado River Reservation, part of the Colorado River Indian Tribes.

Colorado River Indian Tribes. The Colorado River Indian Tribes of the Colorado River Indian Reservation is a federally recognized tribe, headquartered in Parker, Arizona and members of the Mohave, Chemehuevi, Hopi, and Navajo Tribes live here. The Colorado River Reservation was originally established in 1865 for the Mohave. Additional land was added in 1874 to settle Chemehuevi Indians on the reservation. Hopi and Navajo were later settled on the reservation as well (CRIR, 2009a). The Colorado River Reservation encompasses 300,000 acres on the Colorado River. The mainstay of the Colorado River Indian Tribes' economy has historically been agriculture and the tribe grew cotton, sorghum, and alfalfa. The Colorado River Indian Tribes run businesses in sand and gravel quarrying, real estate development and retail. Additionally, they operate the Blue Water Resort and Casino in Parker. The tribal government is administered by a nine-person Tribal Council, which consists of a chairperson, vice chairperson, treasurer, secretary, and five council members.

Fort Mojave Indian Tribe. The Fort Mojave Indian Tribe of Arizona, California, and Nevada is a federally recognized tribe with its governmental seat in Needles, California. The Fort Mojave Reservation covers almost 42,000 acres in Arizona, California, and Nevada. The land is divided into three major segments: 23,669 acres in Mojave County, Arizona; 12,633 acres in San Bernardino County, California; and 5,582 acres in Clark County, Nevada.

The Fort Mojave tribal government consists of a chairperson, vice-chairperson, secretary, and four council members. The tribe operates the Avi Resort and Casino, which contains a casino, hotel, restaurants, and a movie theater. The tribe also hosts an annual Pow Wow every February.

Quechan

The Quechan Tribe of the Fort Yuma Indian Reservation (Quechan Tribe) is a federally recognized tribe with its governmental office in Yuma, Arizona. The U.S. government established the Fort Yuma-Quechan Reservation on the California side of the Colorado River in 1884, although much of the land was appropriated by Euro-Americans settlers. Reservation lands were further broken up by allotment to individual Quechan members in 1912. The tribe ratified a constitution and elected a seven-person tribal council in 1936. In 1978, the tribe had 25,000 acres of land restored to them. Today, the Quechan Tribe's reservation spans the Arizona-California border at the Colorado River near the confluence with the Gila River, and encompasses 45,000 acres of land. The tribal government is headed by a president and vice president, as well as five council members. Business enterprises include a 700-acre agricultural lease to a nontribal farmer and a sand-and-gravel lease to a private company. The tribe also manages trailer and RV parks, a museum, a casino, a utility company, and a fish and game department. The tribe employs a Tribal Historic Preservation Officer and maintains the Quechan Cultural Committee.

Cocopah

The Cocopah Indian Tribe is a federally recognized tribe with its seat in Somerton, Arizona. Cocopah originally resided north of their historically documented territory and are believed to have been displaced by the Mohave and Quechan ca. A.D. 1400-1500. Today there are two branches of Cocopah, one in the United States ("American Cocopah") and one in Mexico ("Mexican Cocopah"). This division resulted from the actions of the United States and Mexican governments concerning Indians residing within the boundaries of these two dominant nations. For instance, in 1917, the United States gave the "American Cocopah" title to three small land areas under the jurisdiction of the Yuma agency. Increased border enforcement in 1930 exacerbated the separation of the two groups. The Cocopah in Arizona began to organize in 1961, beginning with a revision of the tribal constitution and bringing electricity to tribal lands. The Cocopah have three reservations: Cocopah West Reservation, Cocopah East Reservation, and Cocopah Lots 5 and 6. These lands total 1,800 acres. In 1964, the Cocopah Indian Tribe formed its first constitution and a five-person tribal council. In 1985, the Cocopah obtained an additional 4,200 acres of reservation land, including the North Reservation, via the Cocopah Land Acquisition Bill. The tribe is currently led by a chairperson, vice chairperson, and three council members. A Tribal Historic Preservation Officer is employed by the tribe to facilitate cultural resource issues for them.

Cahuilla

Cahuilla leaders Juan Antonio and Cabeson, among others, acted as negotiators for the treaties between the Cahuilla and the U.S. Government in 1851. Reservations were established for the Cahuilla in 1875 and they were able to maintain their traditional patterns in combination with wage labor until about 1891, when federal supervision of the 10 Cahuilla reservations increased. This supervision included enrollment in government schools and cultural suppression of traditional Cahuilla lifeways. Today, Cahuilla reside on eight different reservations in and around the San Jacinto Mountains and Coachella Valley.

Agua Caliente Band of Cahuilla Indians. The federally recognized Agua Caliente Band of Cahuilla Indians was granted land at Tahquitz Canyon, Riverside County, in 1876. From 1891 until the 1930s, Indian Service (Bureau of Indian Affairs) personnel lived on-reservation and

closely controlled tribal politics. The Indian Reorganization Act of 1934 gave more political autonomy to the Cahuilla, permitting, among other rights, the authority to reestablish tribal governments. Currently, the tribe is based out of Palm Springs, California, and its members constitute the largest single landowner in Palm Springs. The Agua Caliente Band is governed by a tribal council consisting of a chairperson, vice-chairperson, secretary/treasurer, and two council members. The council members are elected by the tribe, and elected members appoint four proxy members. The tribe maintains a cultural resources department directed by a Tribal Historic Preservation Officer. The tribe has numerous business ventures including the Agua Caliente Casino, Resort and Spa in Rancho Mirage; the Spa Resort Casino in Palm Springs; a golf resort, and real estate.

Augustine Band of Cahuilla Indians. The Augustine Tribe and their Reservation are both named after Captain Vee-Vee Augustine, a Cahuilla leader born in 1820. There were at least 22 village sites noted by early explorers in the Coachella Valley, one of which ended up being the Augustine Reservation. The Reservation was established by Congress in 1891 at the Temal Wakhish village site near Thermal, California. In 1972 there was only one last surviving member of the tribe, Roberta Augustine the great-granddaughter of Captain Augustine. Roberta had three children who, along with their descendants, constitute the official tribal membership today. This federally recognized tribe is based out of Coachella, California, and is governed by a tribally elected chairperson. Economic ventures for the tribe include the Augustine Casino, and the Augustine Solar Energy Park, a 1.1 MW solar photovoltaic (PV) plant at the Augustine Solar Energy Park built on reservation land.

Cabazon Band of Mission Indians. The Cabazon Reservation was established in 1876 and is a federally recognized tribe based in Indio, California (BIA, 2012:105). The primary economic resource on the 1,153acre reservation is agriculture. As Mission Indians, the Cabazon Reservation associates and interacts closely with the network of other reservations of Mission Indians in the region. The tribal government of the Cabazon Band of Mission Indians consists of five tribally elected officials; a chairperson, a vice chairperson, a secretary/treasurer, a liaison/general counsel, and a member at large. Elections are held every four years for these positions. The tribe employs a cultural resources director to handle cultural resource issues. The Fantasy Springs Casino and Resort in Palm Springs is operated by the tribe.

Cahuilla Band of Mission Indians. The Cahuilla Indian Reservation is located about 25 miles east of Temecula and 35 miles west of Coachella Valley, based out of Anza. The federally recognized reservation was established in 1875 and today consists of about 60 homes on 18,884 acres of land. There are currently 325 enrolled Cahuilla members. The Cahuilla tribal government consists of a five-member tribal council elected by the general membership. The Council consists of a tribal chairperson, a vice chairperson, a secretary, and two council members. In addition, various tribal committees are appointed to address specific government functions within the tribe. Major sources of income for the tribe include the Cahuilla Casino, the Cahuilla Travel Website, and the Cahuilla Smoke Shop. In addition, the tribe has recently allocated 2,000 acres for future economic development, including renewable energy development, commercial warehousing, and a gas station/convenience store.

Morongo Band of Mission Indians. The Morongo Reservation was established in 1876, and is located in Banning, California. Members of the reservation are of the Serrano, Cupeño, and Cahuilla groups. In terms of area, at 35,000 acres, the Morongo Reservation is the largest of the Cahuilla

reservations. The Morongo Band of Mission Indians is a federally recognized group governed by a tribal council consisting of a chairperson and vice chairperson, as well as five council members. The tribe is the largest private-sector employer in the Banning region, and its economic resources include agriculture, cattle, recreation, the Four Diamonds Resort, the Morongo Casino Resort and Spa, restaurants, and a golf course, among other businesses. The tribe maintains a cultural heritage program to promote the tribe's history, language, and connection to the land.

Ramona Band of Cahuilla Indians. The Ramona Indian Reservation was established in 1893 at the base of Thomas Mountain, in Anza, California. In 1970, there were only two members of the tribe, neither of whom lived on the 560-acre reservation. The members of the Ramona Tribe are direct descendants of the Apapatchem clan, known as the "Medicine People." The reservation is located in the area where historically this clan gathered food, water, and medicine, and held spiritual ceremonies and celebrations. The tribal government of the federally recognized Ramona Band of Cahuilla Indians consists of a tribally elected tribal chairperson and vice chairperson. One of the major economic vehicles for the tribe is the Ramona ecotourism project. This is a Department of Energy funded project to develop renewable energy projects in remote locations. The tribe will be one of the first "off-grid" reservations, using wind, solar photovoltaic/propane generator hybrid systems to generate between 65-80 kWh/day to power the reservation's housing, offices, and business ventures.

Soboba Band of Luiseño Indians. The federally recognized Soboba Indian Reservation was established in 1883 on a 3,172-acre parcel that included the village of Soboba. A non-Indian individual also claimed ownership of some of this land. After several legal battles, the private land was purchased by the Federal government and was then held in trust for the people of the Soboba band by the Department of the Interior. Today the Reservation encompasses almost 7,000 acres and there are about 1,200 enrolled tribal members. The Soboba Indian Reservation is located in San Jacinto, California. The Tribal Council consists of a tribally elected chairperson, and a vice chairperson, a secretary, a treasurer, and a sergeant-at-arms who are elected by the Tribal Council.

Torres-Martinez Desert Cahuilla Indians. The Torres and Martinez Reservations were established independently in 1876. Later, under the Relief of Mission Indians Act of 1891, these two reservations were combined. The federally recognized Reservation encompasses about 18,223 acres near Thermal, California. The tribal government of the Torres Martinez Tribe consists of eight tribal council members who are elected by the general membership. The Council members consist of a chairperson, a vice chairperson, a secretary, a treasurer, and four non-office holding members. The tribe employs over 150 people in positions within various tribal departments (e.g., accounting and finance, environmental protection, planning, security), and owns and operates the Red Earth Casino.

Serrano

The Serrano were historically located in the San Bernardino Mountains, east of Cajon Pass. When an asistencia, an outpost of the San Bernardino mission, was established at Redlands in 1819 the Spanish forced most of the Western Serrano into the missions away from their homeland. Those who were located in the area north of San Gorgonio Pass, near Banning, California were able to preserve what remains of Serrano culture today.

San Manuel Band of Mission Indians. The San Manuel reservation was established in 1891 near Highland, California. The federally recognized reservation is the home of the Yuhaviatam Clan of Serrano Indians, and is named after tribal leader Santos Manuel. The reservation consists of 800 acres of mostly mountainous land in the San Bernardino highlands. The San Manuel Tribal Council consists of a seven-member tribal council who serve as the Business Committee. The Tribal Council has a chairman, a vice chairman, a secretary, a treasurer and three business committee members who are elected by the General Council. The General Council consist of all adults 21 years or older. The San Manuel Band of Mission Indians is one of the largest employers in the Inland Empire. Their economic ventures include the San Manuel Indian Bingo and Casino; the Four Fires hotel in Washington, D.C.; the Three Fires hotel in Sacramento, California; and, commercial real estate.

Other Native American Groups with Interests in the Project Area

La Cuna de Aztlan Sacred Sites Protection Circle. La Cuna de Aztlan Sacred Sites Protection Circle are a group of concerned citizens and Native Americans dedicated to the preservation of earth figures and other Sacred Sites in and around the vicinity of Blythe, California. A synopsis of the La Cuna de Aztlan world view and related sacred sites is described below. In general La Cuna de Aztlan suggests an iteration of migration south to eventually form the great Azteca/Mixteca nation. La Cuna de Aztlan interprets the codices, and related stories produced in central Mexico that commemorate the history of the Aztec, to suggest that the codices refer back to the homeland or "Island of Aztlan." The interpretations rely on aligning iconic codex images with local Native American oral history, related sites, places and areas, landforms (such as the various mountains), mountain shadows viewed at particular times of the day and seasons, and solar and other astronomical and cosmological signs and movements.

La Cuna de Aztlan asserts that the Chuckwalla Valley rests in the southwest quadrant of the homeland, and claims that solar projects, including the Project, are impacting this homeland. Specifically, the advocacy group suggests that the Project is placed in a visual and spiritual trajectory between the Ripley intaglios (located several miles south of Blythe and adjacent to and on the east side of the Colorado River), the petroglyphs at Dragon Wash and a 'v' notch of two Eagle Mountain peaks where the sun sets during the summer solstice. Various other assertions suggest that several large boulders near Corn Springs are mythological giants that hold up the space between the earth and the sky and that the thirteen rock cairns along the trail at the western end of the Chuckwalla Valley are depicted on the famous Aztec Calendar (despite the rock cairns now being numbered at 19). These assertions tend to be contradictory of archaeological migratory theories and duplicate or divert from Native American interpretations of the same sites, places and areas on a case-by-case basis. In summary, to quote from the Preface to Alfredo Figueroa's recently revised book, Boma Johnson, a long-term and now retired BLM archaeologist who has extensively studied the Lower Colorado River area, says: "I see many difficulties in his reasoning and lines of evidence, yet I see enough good evidence to intrigue me."

3.4.2.7 Historic-Period Background

The Project is located in an area that has historically been and remains remote from centers of development and settlement. The primary themes in this discussion focus on Spanish and Mexican routes through the desert, and early American traffic, mining, transportation, military training,

power transmission, and agriculture/ranching. The following discussion regarding the historic-period background is primarily excerpted from PSPP SA/FEIS Section 3.4 (Cultural Resources, Historic-Period Background; BLM, 2011). Please see that document for full citations.

Spanish and Mexican Routes through the Desert

Sixteenth-century maritime Spanish explorer, Hernando de Alarcon, made the first inroads into the region in 1540, ascending 85 miles up the Colorado River to the head of navigation near present-day Yuma. Alarcon was sent to supply Coronado's land expedition that had set out on foot from Compostela, Mexico, in search of the fabled seven cities of gold. He eventually cached the supplies and departed after waiting many days. Melchior Diaz, leading a small contingent of Coronado's land unit, later arrived and recovered the supplies. Both Alarcon and Diaz reported the bleak nature of the country. The interior of the Colorado Desert was not explored further until 1702 when Father Eusebio Francisco Kino, a Jesuit missionary, situated in Sonora, began seeking an overland route to coastal California. Nearly seventy years later, Francisco Garcés (a Franciscan Padre) also seeking a route to the coast, forded the Colorado River at the mouth of the Gila River, traveling west through the desert before despairing and turning back. His efforts were eventually rewarded in March of 1774, arriving at Mission San Gabriel, accompanying the expedition of Captain Juan Bautista de Anza. Two mission outposts were subsequently established near present-day Yuma in 1779 to minister to the native Quechan and strengthen Spain's hold on this strategic point of entry into California. All passage along this route, later known as the Anza or Yuma Trail, was discontinued in 1781 when the Quechan revolted and killed over thirty missionaries, settlers, and soldiers, including Garcés.

Jose Maria Romero, a Mexican Army captain, explored a second route between 1823 and 1826, along the indigenous Halchidhoma Trail. He had learned of this route a couple of years earlier when a group of Cocomaricopa Indians from Arizona arrived at Mission San Gabriel, having reportedly crossed the Colorado River near present-day Blythe, journeying westward through the Chuckwalla Valley and over the San Gorgonio Pass. On January 6, 1824, Romero was likely in the vicinity of Palen Lake (Bean and Mason 1962, pp. 40–41), having made his way up the Salton Wash, between the Orocopias and Chuckwallas. Estudillo, one of the members of the expedition, noted horse paths and footpaths of the Indians, and bones along the trail.

Early American Trans-Desert Crossings

In 1846, during the opening stages of the Mexican-American war, General Stephen Watts Kearny led an advance column of the United States Army into the region. From Santa Fe, Kearny's troops entered California by way of Yuma, reaching San Diego in December, having abandoned their wagons shortly after crossing the Rio Grande. The war ended in 1848 with the signing of the Treaty of Guadalupe Hidalgo. Only days after the Mexican-American War ended, gold was discovered, kicking off the California Rush of 1849. It is estimated that more than 100,000 travelers passed by way of the Yuma Crossing. The presence of so many travelers along the route had a definite impact on the desert. Whereas previous expeditions made the journey in isolation, during the Gold Rush, trails became relative highways. Companies of miners frequently encountered one another or ran across the remains of recently vacated campsites. The desert floor also became littered with articles abandoned when they either fell apart or proved too heavy or cumbersome for their weary owners. Broken wagons, furniture, articles of clothing, tools and even weapons left

by the side of the road proved to be a bonanza for scavengers. After 1851, travel to California along the southern route through the Colorado Desert declined. Horse traders and livestock drovers still used the trail to drive herds from Texas and Mexico to California and the U.S. Army continued to send caravans of provisions from San Diego to its outpost, Fort Yuma, at least until 1852. Emigrants, moving west, however, were more apt to be settling in southern California as farmers or ranchers instead of prospecting for mineral resources.

Desert Land Act, Entrymen, and Homesteading

Anglo-American homesteading and settlement in the Chuckwalla Valley was dependent upon the access to groundwater. The first known documented well was that of Hank Brown likely in the vicinity of Gruendike Well, about 3 miles west of the PSEGS project area. Brown also reportedly blazed a wagon road for the boundary surveys up Salt Creek Pass between the Orocopia and Chocolate Mountains and on toward present-day Desert Center. Some twenty years later, Congress, to encourage and promote economic development of the arid public lands of the West, passed the Desert Land Act in 1877. Through this act, individuals could apply for entry onto public lands that could not produce a paying crop without artificial irrigation. After four years demonstrating proof of reclamation and improvements, desert entrymen would gain title to the land.

Brown's offspring, Floyd Brown, was probably one of the earliest participants in the desert land entry program. It does not appear that many others joined him until a quarter century later. In 1908, a subsidiary organization to the Edison Light and Power Company of Los Angeles, the Chuckwalla Land and Power Co., obtained a number of claims on the California side of the Colorado River north of Parker with the intent of building a dam to generate power and irrigate the Chuckwalla Valley, 40 miles to the west. By the following year, practically all the land in the valley was taken, either by purchase, desert claim, or homestead under the encouragement offered by the development company. The Santa Fe Railroad even had plans to build from Palo Verde through the heart of the valley. The Department of the Interior, of the opinion that it was a promoter's pipe dream, refused to sanction the scheme.

Four years later, the California Conservation Commission reported to the Governor and Legislature that while the power and irrigation project had been abandoned by the Chuckwalla Development Company, a group of 410 desert entry men had formed the Chuckwalla Valley and Palo Verde Mesa Irrigation Association to proceed with the Project independently. Most of these men were facing forfeiture of their lands and a loss on their investments, not being able to show final proof of securing water. The Senate and House Committees on Public Lands, recognizing their hardship, passed legislation granting them an extension (an exemption from cancellation for a period of one year) to give them time to carry out their plans. The Chuckwalla relief act benefited 780 entrymen, nearly 100 of whom were situated within the project vicinity.

In 1909, at the start of the land rush, Brown's well was reportedly 300 feet deep, and plainly visible from the road, with two adobe buildings and a corral near it (Mendenhall, 1909). A couple of years later, a man named Peter S. Gruendike settled in the valley not far west of the Project. Gruendike's well is in the same general vicinity of Brown's and may be one-and-the-same. Gruendike was an active entryman, publishing an account of his Mountain View Experimental Ranch in Out West in 1911. By then, he had a good 10-foot-tall windmill in working order and a large tank,

along with many kinds of trees planted and 300 or more palms of different kinds. At the time, he was very enthusiastic regarding the future outlook, having visions of growing hay, grain, melons, grapes, dates, cotton, and all citrus fruits. His land was patented in 1916.

Stephen Ragsdale, a cotton farmer from Palo Verde Mesa, acquired Gruendike's property in 1915 and began operating a towing business at the establishment. Six years later, when Route 60 opened a mile or so to the north, he uprooted and founded the tiny settlement of Desert Center, midway between Indio and Blythe. Desert Center, at that time, consisted of a café with an attached gasoline station, a towing service/repair garage, a market, post office, several cabins for travelers, and a swimming pool. In addition to supporting tourism by providing sparse amenities for travelers, Desert Center supported the local farming community, and a couple of mobile home parks.

Desert Driving and Automobile Roads

Automobiles began seriously replacing buckboards (four-wheeled wagons drawn by a horses or mules) about 1910. Because of bad roads, the high-centered Model-T became the vehicle of choice. At that time, no maps, road signs, or service stations existed. Venturesome motorists in Southern California faced with these circumstances, banded together in 1900 to form a touring club and began publishing a monthly magazine with tips on travel and directions to popular destinations. As desert driving could be perilous, motorists began advocating for better information and road assistance. In 1917, the U.S. Geological Survey erected signs directing travelers to water at 167 localities in California's desert. The California Department of Engineering, after paving its first auto road in 1912, began issuing maps in 1918. In 1915, the Chuckwalla Valley Road was essentially 90 miles of blow sand and cross washes with a couple of ruts. It was not until 1936 that U.S. Highway 60-70 between Indio and Blythe was paved. In 1968, this highway became Interstate 10 (I-10), a major transportation corridor through the Chuckwalla Valley today, connecting Los Angeles and Phoenix. Most other roads in the area remained unpaved.

Canals and Capital, Irrigation in the Colorado Desert

The paucity of water in the desert prior to irrigation made agriculture a challenge. Plans to improve matters began as early as 1880s. Thomas Blythe, an investor from San Francisco, bank rolled the construction of a canal in the Palo Verde Valley, 40 miles east of the Palen Solar PV Project. The water, taken from a swamp area called Olive Lake, was used to irrigate pasturelands and small agricultural plots. With Blythe's death in 1883, no further agricultural development in the valley occurred until the turn of the century. In 1904, the Palo Verde Land and Water Company purchased the Blythe Estate and began the task of constructing additional canals and intake structures. As previously mentioned, the desert entrymen formed the Chuckwalla Valley and Palo Verde Mesa Irrigation Association in 1913. Flood damages inflicted by the Colorado River, however, necessitated the formation of the Palo Verde Joint Levee District in 1917. The Palo Verde Drainage District was later established in 1921. Two years later, the state legislature was petitioned to pass the Palo Verde Irrigation District Act in order to better administer both irrigation and drainage functions.

Although schemes to appropriate Colorado River waters began as early as 1859, the first major canal, the Alamo, was not constructed until 1901. It conveyed water to the Imperial Valley for two years before becoming choked with silt. A temporary measure to bypass the blocked areas resulted in disaster when a spring flood in 1905 diverted the whole river into the Salton Sink,

creating the body of water known today as the Salton Sea. The task of turning the river back into its main channel was extremely difficult and complicated by the fact that the canal had been built on both sides of the U.S.-Mexican border making the repair an international effort. In response to this disaster, the California Irrigation District Act was passed in 1911. The Imperial Irrigation District was subsequently formed to straighten out the mess, acquiring the properties from the bankrupt irrigation company.

In the first decade of the twentieth century, farmers in the Coachella Valley, west of the Project, relied solely upon groundwater from artesian wells, planting extensive dates, figs, and grapes. By 1918, however, the water table had become seriously depleted. The Coachella Valley County Water District was subsequently formed to promote water conservation and control distribution. With completion of a new and improved "All-American Canal" to irrigate the Imperial Valley in 1940, communities in the Coachella Valley began forming plans to tap into it. The Coachella Canal, 122 miles long, was built nine years later.

The Colorado River Aqueduct is a water conveyance structure operated by the Metropolitan Water District of Southern California. It impounds water from the Colorado River at Lake Havasu on the California-Arizona border west across the Mojave and Colorado deserts to the east side of the Santa Ana Mountains. Its construction, between 1933 and 1941, required an army of 5,000 men. It is recognized as one of the engineering marvels of the modern world and was nominated as a National Historic Engineering Landmark by the American Society of Civil Engineers. A portion of this aqueduct tunnels through the Coxcomb Mountains north of the Chuckwalla Valley and the Project.

Hydroelectric Power and Transmission

During the late nineteenth century, history was made generating and transmitting electricity in Southern California's Inland Empire. Pioneer engineers and entrepreneurs took the industry's first steps toward large capacity power plants and long distance power transmission nearly 125 years ago. Charles R. Lloyd and Gustavus Olivio Newman built California's first hydroelectric power plant in western Riverside County in 1887. It relied upon water from a canal in Highgrove at the base of a 50-foot elevation drop. It began by powering 30 outdoor arc lights (15 in Colton and 15 in Riverside) from a direct current dynamo. In the early 1890s, direct current (DC) relied upon a distributed system involving many power plants and numerous short transmission lines because it was not practical to vary the voltage to meet differing consumer requirements for lighting and motorized appliances. Further, DC systems were inefficient because low-voltage transmission necessitated conveyance of high-currents through resistive conducting wires resulting in large energy losses. In contrast, alternating current (AC) relied upon a centralized system involving fewer power plants, long-distance transmission lines, and transformers to step down the voltage, essentially enabling the conveyance of high-voltages at low-currents, thereby reducing resistance and energy loss.

In September of 1893, while the dominant electric companies were fighting over the emerging electric power standards (DC versus AC), the small community of Redlands, in San Bernardino County, managed to engineer and complete the first commercially viable power plant in the United States. With the foresight of Almarian Decker, long-distance electric power transmission was achieved via transformers and the development of a revolutionary three-phase AC generator.

Decker's power generation and delivery system was so successful that it became the Southern California standard.

Hydroelectricity, referred to as "white coal," was a clean and inexpensive source of power that enabled industrial capitalism to take hold in the West. Engineers began to dam western rivers for electricity in the 1890s, just as the hydraulic mining industry declined. Citizens, politicians, and reformers viewed electricity as a necessity that would dramatically uplift the country's standard of living. Water and power companies like Edison Light and Power Company of Los Angeles (later known as Southern California Edison), seeing big money, made every effort to control the stakes.

Before 1913, the highest voltage lines in the Los Angeles area were operated in the 10 to 75 kV range. Some of the earliest distribution lines were built to serve rural communities. During the 1930s, any circuits built were those that extended lines constructed a decade earlier. Many of these lines focused on following railroad spur lines and existing distribution lines to growing communities.

The first electricity came to Blythe in 1917. Two 50-watt diesel engines generated power 18 hours a day. It was not until 1930 that this system was abandoned when a 70-mile-long transmission line was constructed connecting Blythe with Calipatria in the Imperial Valley, where the line's main system was located. In the 1950s, the Blythe-Eagle transmission line was constructed. It was a 161 kV transmission line that connected the Blythe-Eagle Mountain Substation in Blythe to a substation near Eagle Mountain. The other transmission line in the vicinity of the Project is the Devers–Palo Verde line, a 500 kV lattice-tower transmission line constructed in 1982. It connects a plant in Arizona with a substation near Palm Springs.

Mining

The history of mining in Chuckwalla Valley, as throughout much of the rest of Riverside County, is a narrative of relatively sporadic, small-scale activity. Mining of gold, silver, lead, copper, uranium, fluorite, and manganese took place here and there across the county. The mountains surrounding Chuckwalla Valley contain several valuable mineral deposits, including copper, gold, silver, iron, quartz, manganese, and gypsum, with the only sustained mining having been iron mining in the eastern Eagle Mountains and gypsum mining at Midland in the Maria Mountains.

One of the earliest mining discoveries in the region, and the first gold strike in the desert region of Riverside County, was a deposit located by Captain Paulino Weaver in the Mule Mountains in the spring of 1861. It does not appear that Weaver spent much time exploring this deposit because a year later Native American informants led him to gold deposits on the eastern side of the Colorado River near La Paz, Arizona (approximately 6 miles north of present-day Ehrenberg, in western Arizona) which set off a major gold rush that drew large numbers of prospectors to the region. Not long after, miners began combing the mountains on either side of the Chuckwalla Valley. Gold and iron deposits may have been discovered as early as 1865 in the Eagle Mountains and by 1889 there was an established mining interest in those mountains. The Coyote mine was established in 1892, 3 miles southwest of Cottonwood Springs, and the Iron Chief mine was established around 1892, both of which were in the Eagle Mountains. Ownership of the Iron Chief mine changed hands in 1897, but the buyer never completed payment and the original owners installed a cyanide plant and operated the mine until 1902, extracting about $150,000 worth of gold ore

over the 10-year life of the mine. This mine, along with several other claims in the Eagle Mountains, was sold to Southern Pacific in 1909 but lay dormant until 1944 when Kaiser Steel purchased the property. In June of 1948 Southern Pacific completed construction of a 52-mile rail line connecting the Iron Chief mine to the mainline tracks, and Kaiser began mining operations at the Bald Eagle mine about the same time. Today these mines are still in operation, and the company-run community continues to thrive. Other notable mines in the Eagle Mountains included the Black Eagle mine which operated from 1923 to 1928, and again from 1935 to 1940, the Storm Jade mine, which was operated from 1956 to 1967 by Barry Storm who believed that this mine was the source of Mayan jade and the Messenger mine which was in operation as early as 1896.

Mining in the Chuckwalla Mountains began in 1877 by a Mr. Hathaway (early on, the mountains were referred to as the Hathaway Mountains) of San Bernardino, but it was a gold strike in the late 1880s which started a gold rush to the area. By 1887 the Pacific Mining District had been established in the Chuckwallas and encompassed an area about 12 miles by 30 miles in extent. Sixty claims were filed by the end of that year, but the boom fizzled by 1890 because the owners never had enough capital to work their respective claims properly. The Granite and San Diego mines were established in 1894 in the northwestern portion of the Chuckwallas, south of Granite Well. The San Diego mine was located about 4 miles from Long Tank and was owned by E.E. Bowles of San Diego until at least 1924 when the Chuckwalla Mining and Milling Corporation reactivated the property, overhauled the old, onsite mills and extracted and processed ore until 1929. Many other mines are known in the Chuckwallas, including Coffee mine, a quartz mine 4 miles south of Corn Spring and operated jointly with the Ritchie mine as early as 1896. Lane mine which was southeast of Granite mine and operated in 1896, Bryan mine which was 2 miles south of Corn Spring and in operation from 1898 to 1900, and the Red Cloud mine in the western portion of the Chuckwallas. In 1896 the Sterling mine was operated by the Sterling Mining Company of Los Angeles, two years later the 40 claims of this mine were under control of the Red Cloud Mining Company. Ownership of the property changed hands again around 1915 to J.M. Huston of Los Angeles and the Red Head Group, but the mine was abandoned by 1918. In November of 1931, the mine was reactivated when a small amalgamation plant was built. The mine was leased until 1940, and in 1945 all of the mining equipment was removed.

Transportation of ore from the Chuckwallas was problematic in the early days of mining in the region. There were few developed roads or railroads in the area. Sensing a demand for his services, in 1912 E.L. Blake operated the "Chuckwalla Express" with his two burros, hauling ore between Mecca and the Chuckwalla Mountains. There were many miners in the region during 1912, especially camped out at Chuckwalla Spring in the southern portion of the mountains, and the Chuckwalla Mountains made the news for non-mining events when there was a murder at the placer diggings at Chuckwalla Spring in March of that year.

In the early 1880s, Matt Palen and William McCoy prospected in the Palen, McCoy, and Maria Mountains, and, in 1880, Palen and H. Connor discovered copper deposits, as well as gold and silver, in the west-central portion of the Palen Mountains. By 1900 two small copper mines had been established in the Palen Mountains in addition to Matt Palen's, the Homestake mine (also known as Lightfoot mine) in the central portion of the eastern Palens, and the Orphan Boy mine about 2 miles south of Packard's Well. Palen's mine and what was likely his home was rediscovered in 1969, and the deposits were found to still be rich in copper, silver and gold ore. In September of 1913 iron was discovered in the extreme southern portion of the range, but the claim

does not appear to have been developed. Copper mining in the Palen Mountains appears to have reached its zenith during the second decade of the twentieth century with activity at the Fluor Spar Group, Homestake Group, Crescent Copper Group, Orphan Boy, and Ophir mines. Most of these mines were abandoned by 1917.

The Ironwood Mining District has been active since 1929 and encompasses claims in the Palen, McCoy, Arica, and Maria Mountains. Minerals mined in the Ironwood District include copper, gold, silver, zinc, lead, manganese, and gypsum. Numerous claims are contained within the District including, the Crescent Group with 40 claims on 700 acres and the Badger State Group with 10 claims on the east side of the McCoy Mountains. The mines were active until ownership was transferred to the Crescent Group and once these mining operations were combined they came to be known as the Eagle Nest Copper mine, although the mines are currently idle. In addition to the mines in the Palen Mountains mentioned above, other mines in the Ironwood Mining District include the Arica Group with 28 claims on 560 acres, the Mountain King Group with three claims on the east side of the McCoys, the Fluor Spar Group with three claims on the west side of the Palens, the Black Jack Manganese mine and the Bray Manganese mine in the McCoy Mountains which were in operation until July of 1919, and Montague Mascot who made four gypsum claims in the northwest portion of the Palen Mountains in 1904, and an additional 13 claims by May of 1906. Demand for manganese during the First World War was high, and manganese mining in the McCoy Mountains during this time period flourished with as many as 10 active mines. The price of manganese fell with the end of the war, but with the start of World War Two demand again increased and the Arlington mine in the McCoy Mountains began shipping out ore in February of 1942. The Palisade mine was a rich deposit of zinc, lead, copper, silver, bismuth and gold located in 1918 in the Little Maria Mountains, and stayed active until about 1920. The mine remained idle until about 1950when the property was renamed the Bald Eagle mine and operated for two years.

Gypsum mining in Midland began in earnest in the early 20th century, with numerous claims staked by various groups between 1907 and 1908. In 1910 the United States Gypsum Company conducted extensive prospecting of these claims in an effort to determine the value of these gypsum deposits. The Company purchased these claims in 1911 and began drilling holes and preparing the property but had to wait to conduct large-scale mining until 1916 when a rail line was completed. Mining at the property didn't fully commence until after the First World War, and in 1925 the first shipment of crushed gypsum left Midland. Operations continued and multiple production facilities and housing units were constructed to facilitate the growing business. The Midland facility shut down operations in December of 1960.

Military Activities

Evidence of military training is present across the Colorado Desert. George Patton's Desert Training Center/California-Arizona Maneuvers Area (DTC/C-AMA) and Operation Desert Strike have left many artifacts, features, and sites across the region. The project area is located near the western edge of the where previous military training took place, evidence of which can be found within the APE (Tennyson et al., 2017).

Desert Training Center

In 1942, during World War II, Gen. George S. Patton established the Desert Training Center/California-Arizona Maneuver Area (DTC/C-AMA) in a sparsely populated region of southeastern California, Arizona, and Nevada. Its purpose was to prepare tank, infantry, and air units for the harsh conditions of North Africa, practicing maneuvers, developing tactics, and field testing equipment. The installation, in operation for two years (until the end of the war), was 16,000 square miles in extent. It was the first simulated theater of operations in the United States. Its location was chosen for its unforgiving desert heat, rugged terrain, available telephone communications system, and accessibility by established railroads and highways.

Recent renewable energy projects in the region have identified many DTC/C-AMA-related sites, artifacts and features. These resources were understood to be pieces of a larger historic district which represents an important piece of the military history of the nation. The DTC/C-AMA was the largest training facility and the only one of its kind in American military history, eventually encompassing more than 18,000 square miles. The tactical, strategic, and logistical doctrines developed and refined during the facility's life were applied overseas and undoubtedly helped to win World War II.

BLM is in the process of preparing a National Register of Historic Places Multiple Property Documentation Form (NPS 10-900-b) for DTC/C-AMA historic properties (Bischoff et al., 2012). In this draft document, the themes, trends, and patterns of history shared by the DTC/C-AMA properties are organized into historic contexts and the property types that represent those historic contexts are defined. Property types include: Maneuver Areas, Divisional Camps, Small Unit Training Areas, Air Facilities and Crash Sites, Bivouacs, Campsites, Ranges, Supply Depots and Railroad Sidings, and Hospitals and Medical Centers. Based on the close proximity of Desert Center, sites within the project area could be related to most of these property types. BLM intends it to be used to establish criteria for evaluating the eligibility of DTC/C-AMA related resources. The period of significance for the DTC, and later the DTC/C-AMA, is 1942-1944.

Maneuver Areas: The Chuckwalla Valley

The greater Chuckwalla Valley was considered a maneuver area, consisting of 11,520 acres, and was considered "contaminated" immediately after the war. Units moved across this valley in many of the maneuvers, and bivouacs and defensive positions were established in many locations. The valley, with its many washes and arroyos, surrounded by rugged mountains made for an apt place for training for war in North Africa. These washes, referred to as wadis overseas were often places of tactical importance, as they allowed for the concealment of a variety of types of units. They could also serve an impediment to rapid movement. Several passes adjacent to this valley also posed good training grounds for movement, attack, and defense (Bischoff et al., 2012).

Desert Center Airport

The Desert Center Army Airfield was first known as the Desert Center Airdrome, and was operational beginning sometime in the winter of 1942–1943. The airfield was a sub-base of Thermal Army Airfield, as a support base for the Air Technical Services Command. The airport contained two paved runways, each measuring 5,000 by 150 feet, along with taxiways and a parking apron. More than 40 buildings were constructed at the airfield, including an operations building, power

house, control tower, pump house and well, and a 10,000-gallon water tower. Other buildings included officer's quarters, mess hall, dispensary, headquarters, recreation hall, link trainer building, hangar, and various supply buildings. Several crash sites are known to exist in the DTC/C-AMA, particularly in those areas close to air facilities (Bischoff et al., 2012).

Air-to-ground ranges are also considered a part of air facilities. For the most part, air-to-ground gunnery practice focused on the toe of mountains. Bombs and .50 caliber shell casings from these activities have been found in the years following the Army's departure from the area. There were likely range markers established on these facilities, along with targets for the aircraft to fire upon (Bischoff et al., 2012).

Desert Center Observer's Camp

A camp was established immediately north of the small town of Desert Center, along the road to Camps Coxcomb and Iron Mountain. It was here that the maneuvers were evaluated, and deficiencies pointed out. The camp contained 112 tents, 5 shower buildings, and 8 latrines. The camp was also supplied with water through a well and pump, and a 4,000-gallon storage tank. The land is located along the north side of Interstate 10, between Chiriaco Summit and Desert Center, as well as land immediately to the east of Eagle Mountain Road (Bischoff et al., 2012).

18th Ordnance Battalion Campsite

Located 5 miles east of Desert Center, this camp appears to encompass a watering point. The only structures reported included a capped well, a 50,000-gallon water tank, and a wooden tower. Tent stakes and other refuse have been found in an area that relate to this camp (Bischoff et al., 2012).

Small Arms Range – Desert Center

A small arms range was established southeast of the town of Desert Center, on the north end of the Chuckwalla Mountains. The type of weapons used here is not known, nor are the units that used it. In addition to established ranges, troops also developed their own more informal ranges while out on field exercises. In these cases, officers chose a suitable place with appropriate safety precautions (particularly natural features that formed a backstop), and established a firing position for their troops to use live ammunition (Bischoff et al., 2012).

Desert Center Supply Depot

A quartermaster truck site was established near the small community of Desert Center. A rock alignment for the 496th Medium Ordnance Company remains northeast of the town. The rock alignment spells out "496 MEDCO." An ammunition depot was established northeast of Desert Center, although its location has not been examined or relocated (Bischoff et al., 2012).

Desert Center Evacuation Hospital

An evacuation hospital was established near the town of Desert Center, on both sides of the road to Eagle Mountain. The hospital site remains in good condition today, and retains its basic design and layout. Many rock-lined walkways, roads, symbols, tent sites, and other activity areas remain in place. Artifacts are also in existence, dispersed across the site as well as in dumps. Artifacts

remaining include cans, bottles, bandage spools, glass, wood, and miscellaneous metal. In addition, a motor pool for the hospital site remains. Rock alignments, military vehicle parts, and a solvent basin mark this location today (Bischoff et al., 2012).

Desert Strike

During the Cold War years, relations between the United States and the Soviet Union were diplomatically strained, primarily as the result of the bi-lateral proliferation of nuclear weapons. While a campaign promoting the nonproliferation of nuclear weapons began in 1958, a treaty was not signed until 1970. Thus, amid worries of nuclear war, a two-week training exercise was launched in 1964, called Desert Strike. It involved over 100,000 men, 780 aircraft, 1,000 tanks, and 7,000 other vehicles along the banks the Colorado River and adjoining desert valleys ranging over 150,000 square miles of California, Nevada, and Arizona. Four Army divisions, three Army Reserve and National Guard brigades, and fifteen tactical Air Force squadrons took part. The exercise was a two-sided enactment, with fictitious world powers "Calonia" and "Nezona" sharing a common border at the Colorado River. The premise of the conflict between these two entities, each led by a Joint Task Force, was a dispute over water rights. Major tactical operations during the exercise included deep armored offensive thrusts, defensive operations along natural barriers, counterattacks including airmobile and airborne assaults, and the simulated use of nuclear weapons. The Air Force provided fighter, air defense, interdiction, counter-air reconnaissance, and troop carrier operations in support of both joint task forces. In the first phase of Desert Strike, Calonia initiated mock battle with a full-scale invasion of Nezona. A new concept for military river crossings was put into operation during this invasion, accomplished with a combination of assault boats, amphibious armored personnel carriers, ferries, bridges, and fords at eight major sites along a 140-mile stretch of the Colorado River. The practice of attack and counterattack continued into a second phase, in which simulated nuclear strikes and airborne assaults were traded between the forces. Heavy equipment, such as the M60 tank, was used during practice maneuvers, and the track marks can still be seen across the desert.

3.4.2.8 Cultural Resources Inventory

This subsection provides the results of cultural resource inventories for the Project, including literature and records searches (California Historical Resources Information System (CHRIS) and local records), archival research, Native American consultation, and field investigations.

Area of Potential Effect

Section 106 of the National Historic Preservation act (NHPA), and its implementing regulations at 36 CFR 800, define the Area of Potential Effects (APE) as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16(d)).

For purposes of complying with Section 106, the direct APE consists of the 3,969.0-acre project site with a 30-foot buffer and a 563.54-acre 600-foot transmission line corridor 6.93 miles in length. The APE expands to a radius of 600 feet at proposed transmission line pull sites. In total the direct APE consists of 4,532.56 acres. There is a small amount of private land, 63.4 acres

within the direct APE. Approximately 12 acres, has not been surveyed to BLM Class III standards and will either be removed formally from the APE, or will be surveyed later. The indirect APE consists of the direct APE with a five-mile buffer.

Class I Inventory

The Class 1 overview is a summary of literature, records, and other documents providing an informed basis for understanding the nature of the cultural resources of the study area. A supplemental record search with a five-mile buffer building upon the PSPP and PSEGS (15-mile buffer) searches, was conducted for the Palen Solar PV Project to incorporate information available after 2013. The records and literature search results indicated that 99 previous investigations had been conducted within a 15-mile radius of the project area. These included 72 survey-level investigations, five reconnaissance-level studies, two records search studies, two sample survey studies, three overview studies, three BLM Project Review and Statistical Summaries, nine Phase II/testing/evaluation reports, and three monitoring reports (Tennyson et al., 2017).

Six of the studies were undertaken within some portion of the PSP. In addition, the PSPP and PSEGS cover a majority of the project site (Tennyson, 2010; Tennyson and Apple, 2010, Tennyson et al., 2013). Please see those documents for additional details. Thirty-three of the studies are located within a 5-miles radius of the project site, and the remaining 68 studies are located between a 5- and 15-mile radius of the project site. Three utility-scale solar energy projects have been completed within the 15-mile research area for PSP. Genesis, Desert Sunlight and Desert Harvest are major studies that are analogous in size and scope with similar facilities (large areas for solar panels/collectors, power stations, and transmission lines). Portions of the Desert Sunlight gen-tie line are located adjacent to the project gen-tie line as it approaches the Red Bluff Substation.

The records and literature search results found 1,368 previously recorded archaeological resources within the project footprint and 15-mile radius of the project area. These results include all resources recorded during previous versions of the Project, PSPP and PSEGS. Of the 1,368 total, 769 are sites and 599 are isolates. Of the 769 sites, there are 427 historic, 318 prehistoric, six multicomponent, and 18 resources of unknown age. Of the 599 isolates, 323 are historic, 271 are prehistoric, and five are unknown or multicomponent.

Sixty-four of the previously identified sites and 84 of the previously identified isolates are located within the project footprint. Of the remaining, 1,187 resources, 264 sites, and 213 isolates are located within a 5-mile radius of the project site, and 446 sites and 264 isolates are located between 5 and 15 miles from the project site. An overwhelming majority of the cultural resources within the search area have been documented within the last 13 years, with 183 having been recorded or updated in 2002 or earlier and 1,133 having been recorded or updated in 2003 or later.

BLM Class III Survey

The 2016 Class III survey builds on and supplements work done for the PSPP and PSEGS projects (Tennyson 2017: Tennyson et al., 2017). Fieldwork for the PSP included the following:

- An intensive archaeological survey of small parcels in the southernmost portion of the project area (27.7 ac) and portions of the gen-tie alignment (209.1 ac), which had not been surveyed

during previous archaeological surveys. 207.3 ac of BLM-managed land was surveyed during this effort.

- An intensive archaeological survey of 21.3 ac of the 33.1 ac of private land in the direct APE which had not been surveyed as part of previous archaeological surveys (Tennyson, 2017). Approximately 12 acres within direct APE that has not been surveyed to BLM Class III standards. These areas will either be removed formally from the APE, or will be surveyed later.
- Intensive resurvey of sensitive portions of an approximate 229.7-ac area in the northeastern section of the Project where wind and rain may have uncovered sites in Quaternary sand dunes (Qs) located there since previous archaeological surveys were conducted for the PSPP and PSEGS projects. This area included 226.1 ac of BLM-managed land.
- Limited Testing of CA-RIV-9869 and CA-RIV-9877, two prehistoric sites identified during Class III surveys conducted in 2009 that were not formally evaluated under all NRHP criteria at the time due to their potential to have subsurface components. During the current study, subsurface investigations at each site focused on identifying subsurface components and evaluating the sites' data potential, research value, and eligibility for NRHP and California Register of Historical Resources (CRHR) inclusion.
- Documentation of archaeological site conditions for resources to the immediate northeast of the Proposed Action, outside the direct effects APE. Nine prehistoric archaeological sites, documented during studies for the two previously proposed solar projects, were revisited: CA-RIV-9846, CA-RIV-9847, CA-RIV-9848, CA-RIV-9849, CA-RIV-9868, CA-RIV-9913, CA-RIV-9914, CA-RIV-9915, and CA-RIV-9916.

Thirteen previously unrecorded sites were identified in direct effects APE. Eleven are historic sites and two are prehistoric. Twenty-one isolated artifacts were also recorded during the survey (Tennyson 2017; Tennyson et al., 2017).

Resources Identified Within the Project Direct Effects APE

Seventy-seven resources are present within the direct effects APE (Tennyson et al., 2017). These include 3 built environment resources (2 roads and 1 transmission line), 7 prehistoric archaeological sites (lithics, groundstone and fire affected rock), and 66 historic-era archaeological sites mostly associated with the DTC/C-AMA. No human remains have been identified as components of these resources. Three hundred and eighty-four isolated artifacts are also present within the direct effects APE. Sixteen are prehistoric and 368 are historic.

One site, CA-RIV-9481, identified through historic research to be the 18th Ordinance Battalion Campsite, has been recommended for inclusion to the NRHP and CRHR for its association with the Desert Training Center/California-Arizona Maneuvers Area (DTC/C-AMA) under Criterion A/1. This resource represents a distinct outpost associated with operation of the DTC/C-AMA and represents a unique aspect of the base, rather than various other site types (i.e., emplacements, tank tracks, and debris scatters).

Eligibility recommendations for all resources within the project direct effects APE are listed in Table 3.4-1. None of the isolates are eligible for the NRHP and CRHR and are not considered further.

Table 3.4-1. Resources Identified Within the Direct Effects APE: Previously Recorded Resources

Trinomial	Primary (P-33-)	Site Type	Location	NRHP/CRHR Recommendation
N/A	018299	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9481	018393	Historic debris scatter	Gen-tie corridor	Eligible A/1, Not Eligible B–D/2-4
CA-RIV-9835	019396	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9836	019397	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9837	019398	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9838	019399	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9839	019400	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9840	019401	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9841	019402	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9842	019403	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9843	019404	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9844	019405	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9845	019406	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9850	019411	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9851	019412	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9852	019413	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9853	019414	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9854	019415	Transmission line and associated road	Plant site and gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9855	019416	Historic survey markers	Plant site	Not Eligible A–D/1-4
CA-RIV-9856	019417	Tank tracks	Plant site	Not Eligible A–D/1-4
CA-RIV-9857	017766	Historic road	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9858	019419	Historic road	Plant site	Not Eligible A–D/1-4
CA-RIV-9859	019420	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9860	019421	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9861	019422	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9862	019423	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9863	019424	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9865	019426	Historic debris scatter and tank tracks	Plant site	Not Eligible A–D/1-4
CA-RIV-9866	019427	Historic debris scatter and tank tracks	Plant site	Not Eligible A–D/1-4
CA-RIV-9867	019428	Historic debris scatter and tank tracks	Plant site	Not Eligible A–D/1-4
CA-RIV-9869	019430	Lithic and ground stone scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9870	019431	Historic corral	Plant site and gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9871	019432	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9872	019433	Lithic scatter with FAR features	Plant site	Not Eligible A–D/1-4
CA-RIV-9873	019434	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9874	019435	Historic debris scatter and tank tracks	Plant site	Not Eligible A–D/1-4

Table 3.4-1. Resources Identified Within the Direct Effects APE: Previously Recorded Resources

Trinomial	Primary (P-33-)	Site Type	Location	NRHP/CRHR Recommendation
CA-RIV-9875	019436	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9877	019438	Lithic and ground stone scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9878	019439	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9898	019459	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9899	019460	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9900	019461	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9901	019462	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-9902	019463	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9903	019464	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9907	019468	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9908	019469	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9909	019470	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9911	019472	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-9912	019473	Historic debris scatter	Gen-tie corridor	Not Eligible A–D/1-4
CA-RIV-11710	023861	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11711	023862	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11712	023863	Tank tracks	Plant site	Not Eligible A–D/1-4
CA-RIV-11713	023864	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11714	023865	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11715	023866	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11716	023867	FAR features*	Plant site	Not Eligible A–D/1-4
CA-RIV-11717	023868	Lithic scatter with rock features	Plant site	Not Eligible A–D/1-4
CA-RIV-11718	023869	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11719	023870	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11720	023871	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11721	023872	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11722	023873	Historic debris scatter	Plant site	Not Eligible A–D/1-4
CA-RIV-11723	023860	Historic debris scatter	Plant site	Not Eligible A–D/1-4

Table 3.4-1. Resources Identified Within the Direct Effects APE: Previously Recorded Resources

Newly Identified Sites

Temporary Site Number	Site Type	Location	NRHP/CRHR Recommendation
Palen-1H	Historic debris scatter	Gen-tie	Not Eligible A–D/1-4
Palen-2H	Military emplacement features	Gen-tie	Not Eligible A–D/1-4
Palen-3H	Historic debris scatter	Gen-tie	Not Eligible A–D/1-4
Palen-5H	Historic debris scatter	Gen-tie	Not Eligible A–D/1-4
Palen-6H	Historic debris scatter	Plant site	Not Eligible A–D/1-4

Table 3.4-1. Resources Identified Within the Direct Effects APE: Previously Recorded Resources

Palen-7H	Historic debris scatter	Plant site	Not Eligible A–D/1-4
Palen-8H	Historic debris scatter	Plant site	Not Eligible A–D/1-4
Palen-9H	Historic debris scatter	Plant site	Not Eligible A–D/1-4
Palen-10H	Historic debris scatter	Plant site	Not Eligible A–D/1-4
Palen-11H	Historic debris scatter	Plant site	Not Eligible A–D/1-4
Palen-12	Ground stone and flake scatter	Plant site	Not Eligible A–D/1-4
Palen-13	Ground stone and flake scatter	Plant site	Not Eligible A–D/1-4

Source: Tennyson et al., 2017.

Culturally Sensitive Areas Identified in the Project Indirect Effects APE

Four culturally sensitive areas have been identified within, or partially within, the Project indirect effects APE — the Palen Dry Lake ACEC, the Alligator Rock ACEC, the Corn Springs ACEC, and the Palen-Ford Playa Dunes ACEC. This discussion is based on *Palen Solar Project Assessment of Indirect Effects to Culturally Sensitive Areas* (Tennyson et al., 2017: Appendix E). Please see that document for more detailed citations.

Each culturally sensitive area has been recommended by a consultant to be eligible for the National Register of Historic Places under Criterion A (relating to broad patterns of prehistory) and Criterion D (potential to contribute to scientific research) (Tennyson et al., 2017: Appendix E). The BLM currently believes that the four culturally sensitive areas contain relevant and important cultural values, including archaeological values listed on the NRHP under Criterion D. The values do not appear to be eligible for the NRHP under Criterion A and would not be affected by the Project. However, continued government-to-government consultation between BLM and interested Tribes is ongoing to understand whether the culturally sensitive areas contain values eligible under Criterion A (relating to the broad patterns of prehistory) and determine whether they would be affected by the Project in any way.

Palen Dry Lake ACEC. The Palen Dry Lake ACEC is in an area of sand dunes along the southeast shoreline of Palen Dry Lake on the floor of the Chuckwalla Valley west of the Palen Mountains and southeast of the Coxcomb Mountains. The boundary of the 3,600 acre (ac) ACEC includes portions of the dry lake and surrounding dunes and mesquite hummocks. Designated by the BLM in 1981, the ACEC lies fully within the Indirect APE near the northeast boundary of the Direct APE for the Project. The area was designated to protect cultural resource values identified within the boundaries including prehistoric archaeological sites with significant potential information value.

The Palen Dry Lake and surrounding area features several archaeological sites and features including lithic and ceramic scatters, cleared circles/rock rings, rock alignments, and petroglyphs. Shifting sands constantly alternate from hiding to revealing portions of sites as the heavier artifacts remain in place while dunes gradually migrate from the northwest to the southeast toward the Ford Dry Lake area.

Archaeological and geoarchaeological investigations at the Palen Dry Lake sites suggest the area was used for logistical forays in the area for locally procured resources such as mesquite and palo verde beans, salt brush, grasses and other hard seed plants, desert tortoise, and rabbits. Site CA-

RIV-1515 lies partially within the ACEC and contains a diversity of cultural materials including fire-cracked rock, chipped and ground stone artifacts, and ceramics. Contemporary tribes consider the dune sites of particular cultural value as they provide habitat for culturally sensitive plant and animal species such as desert tortoise. Government to government consultation is ongoing, but the BLM has not determined that there is continued tribal traditional use of resources in this area that is significant and may be affected by the presence of the Project nearby.

Alligator Rock ACEC. The 6,800-acre Alligator Rock ACEC, designated in 1986, is located adjacent to the north portion of the Chuckwalla Mountains. It lies partially within the western boundary of the Indirect APE, about 9 miles west of the project area and 5 miles west of the western end of the gen-tie route. The boundary of the Alligator Rock ACEC includes the geologic landform itself, the North Chuckwalla Petroglyph National Register District (CA-RIV-01383), the North Chuckwalla Prehistoric Quarry National Register District (CA-RIV-01814), and the Long Tank Site.

The Alligator Rock landform, located just outside the indirect APE boundary, is a prominent geologic landform likely named for the desert reptile, the large Chuckwalla lizard.

The North Chuckwalla Petroglyph District is located in the northern portion of the Chuckwalla Mountains near the eastern boundary of the ACEC. The District includes all of the boulders that have petroglyphs, the rock rings, cleared circles, trails, and archaeological artifacts and features in their vicinity. It is within the Indirect APE less than 6 miles west of the project area and a mile west of the western end of the proposed gen-tie route. The area is unique in that it provides for the largest and most well preserved assemblages (more than 170 panels) of late prehistoric and archaic era petroglyphs representing human habitation over several thousand years. The petroglyphs feature several geographically distinct stylistic motifs linking the interior deserts, the Great Basin, and the coast. One stylistic motif has yet to be explained by local rock art specialists, some say they are "ringing rocks" (rocks that produce a percussive sound) yet other researchers claim some as yet unknown function.

The Quarry District is located about 2 miles east of the Alligator Rock landform on the northeast slopes of the Chuckwalla Mountains. The 480-acre Quarry District lies within the western boundary of the Indirect APE, about 7 miles west of the project area and 3 miles west of the western end of the transmission line route. This location is a source of a gray- green, speckled, felsic toolstone called Aplite that has been documented in archaeological sites throughout the Chuckwalla Valley. Flakes and cores of this felsic toolstone have been located as far away as the banks of the Colorado River flood plain. The District contains at least 84 documented lithic reduction loci in addition to ceramics, a rock shelter, rock rings, and trail segments.

Other noted cultural components of the Alligator Rock ACEC are rock basin features that served as an ephemeral source of water. A large wash running north out of the Chuckwalla Mountains at CA- RIV-1383 features several basins (also called tinajas) above and below intermittent waterfalls, which likely served early peoples with a seasonal source of water. Known as Long Tank, this site is situated 5 miles from the Alligator Rock landform on the northern slope of the Chuckwalla Mountains within the Indirect APE about 8 miles west of the project area and 3 miles southwest of the western terminus of the proposed gen-tie.

Corn Springs ACEC. The Corn Springs ACEC, designated in 1980, is in the southern portion of the indirect effects APE. The Corn Springs petroglyph site (CA-RIV-032) is located just within the southern boundary of the Indirect APE, approximately 5 miles southwest of the project area. Corn Spring not only provided a source of water, which was reportedly used to grow corn, but the canyon walls and immediately surrounding boulders contain more than 600 petroglyphs, a common occurrence near key water sources. The rock art is reported to contain pictorial representations of past events and activities.

Palen-Ford Playa Dunes ACEC. The Palen-Ford Playa Dunes ACEC, designated in September 2016, contains the entire playa and dune system of Chuckwalla Valley including Palen Dry Lake and Ford Dry Lake, both prominent landform features located south of the Palen Mountains and the McCoy Mountains. This extensive 41,370-acre ACEC is recognized for the biological values it contains, protecting an entire dune ecosystem for many dune dwelling species and providing key wildlife habitat connectivity among five nearby designated wilderness areas. The ACEC includes portions of the Palen Dry Lake ACECs and extends into the Indirect APE bordering the northeast boundary of the project area. The unit contains a large number of archeological sites that are associated with the lacustrine environment of Pleistocene Palen/Ford Lakes, some of which are contained within the existing Palen Dry Lake ACEC. Disparate sources and collections of intermittent water have provided many small niches for plant and animal communities to survive providing resources for human populations over thousands of years.

3.5 Environmental Justice

This section describes the environmental justice baseline for the Palen Solar Project. The analyses of environmental justice impacts for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 California Energy Commission (CEC) Revised Staff Assessment (RSA) for the PSPP, Section C.8, Socioeconomics and Environmental Justice.
- For CEQA, the 2013 CEC Final Staff Assessment (FSA) for the PSEGS (solar power tower analysis), Section 4.8, Socioeconomics.
- For CEQA, the 2014 CEC Revised Presiding Member's Proposed Decision for the PSEGS.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.5, Environmental Justice.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.5, Environmental Justice.

The affected environment and regulatory information presented in this section relies on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated population and demographic estimates from the U.S. Census Bureau. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

3.5.1 Regulatory Framework

Executive Order 12898

In 1994 President Clinton issued the Executive Order, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, to focus federal attention on environmental and human health conditions in minority and low-income communities. Executive Order (EO) 12898 promotes nondiscrimination in federal programs that substantially affect human health and the environment, and it provides information access and public participation relating to these matters. This order requires federal agencies (and state agencies receiving federal funds) to identify and address any disproportionately high or adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations. The Council on Environmental Quality (CEQ) oversees federal compliance with EO 12898.

Council on Environmental Quality's Environmental Justice Guidance Under the National Environmental Policy Act

To ensure that environmental justice concerns are effectively identified and addressed according to EO 12898, the CEQ, in consultation with the Environmental Protection Agency (EPA), developed guidance to assist federal agencies to implement procedures. According to the CEQ's "Environmental Justice Guidance Under NEPA," agencies should consider the composition of affected areas to determine whether minority or low-income populations are affected by a

proposed action, and, if so, whether those environmental effects may be disproportionately high or adverse (EPA, 1998 and CEQ, 1997).

According to the CEQ environmental justice guidelines, minority populations should be identified if:

- A minority population percentage either exceeds 50 percent of the population of the affected area, or
- If the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (e.g., a governing body's jurisdiction, neighborhood census tract, or other similar unit).

3.5.2 Existing Conditions

Minority Populations

According to the CEQ, minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (CEQ, 1997). Table 3.5-1 presents the minority population composition of planning areas in the vicinity of the proposed project site, based on the 2010-2014 American Community Survey (ACS). The populated area nearest the site is the community of Desert Center, represented in the ACS as the Desert Center Census Designated Place (CDP), which represents ZIP Code 92239. In addition to Desert Center, environmental justice data is shown for the City of Blythe and Riverside County as a whole.

Table 3.5-1. Racial and Income Characteristics for Residents within the Environmental Justice Study Area

Geographic Area	Total Population	Total (Percent) Minority[1]	Proportion of the Total Population Living Below the Poverty Level
Desert Center CDP	208	89 (42.8%)	33.2%
City of Blythe	20,101	14,414 (71.7%)	23.2%
Riverside County	2,266,899	1,398,156 (61.7%)	16.9%

[1] All Population Other Than Non-Hispanic White
Source: U.S. Census Bureau, 2016a and 2016b

As shown in Table 3.5-1, Desert Center does not contain a minority population greater than 50 percent. However, all planning areas around the proposed site (nearby City of Blythe and Riverside County as a whole) contain minority populations exceeding 50 percent of the total population.

Low-Income Populations

Unlike the CEQ guidance (1997) on minority populations, CEQ guidance (1997) on low income populations does not contain a quantitative definition of what proportion of low-income individuals defines a low-income population. In the absence of guidance, this analysis relies on the density used to identify a minority population as "meaningfully greater" than the general population (comparison of Desert Center to Blythe to Riverside County). To provide a conservative analysis, if the population of individuals living under the poverty line is greater than

that of the general population, this analysis considers that community to be a low-income population of concern.

As shown in Table 3.5-1, Riverside County contained 16.9 percent of the population reporting incomes below the poverty level. The City of Blythe reported a slightly higher (23.2 percent) proportion of the population with incomes below the poverty level. The community of Desert Center has 33.2 percent of the population identified as living below the poverty level. Because this population meets the definition of a meaningfully greater low-income population than Riverside County as a whole, the community of Desert Center is considered to be an area containing low-income population of concern for the purposes of this analysis.

3.6 Lands and Realty

The previous analyses of impacts on lands and realty at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.6, Land Use and Planning, Agriculture and Forest Resources, Wilderness and Recreation.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.6, Recreation.

The affected environment and regulatory information presented in this section relies primarily on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates the updated land use classification in the project area as a result of the 2016 Desert Renewable Energy Conservation Plan Record of Decision. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

BLM manages a diverse combination of lands and resources administered by BLM in eastern Riverside County, including, but not limited to, land uses for utility corridors, communication sites, land use authorizations (permits, leases, and rights-of-way), withdrawals, and land tenure (disposal, acquisition or easement) actions. Within the immediate and surrounding areas of the project site, there are no communications sites, land use permits, leases or easements of record, nor are any land tenure issues identified in close proximity to or that would be affected by the Project. There are, however, utility corridors, rights-of-way and renewable energy activities, and a withdrawal application.

3.6.1 Regulatory Framework

Federal Land Policy and Management Act of 1979

Section 503 of Title V of the Federal Land Policy and Management Act of 1976, as amended, (FLPMA) required the establishment of corridors, to the extent practical, to minimize adverse environmental impacts and the proliferation of separate rights-of-way. Through its planning efforts, the Palm Springs-South Coast Field Office has designated corridors throughout the Field Office boundaries that generically are identified as "locally designated corridors" and specifically are identified by an alphabetical reference.

Energy Policy Act of 2005

Section 368 of the Energy Policy Act of 2005 directs the Secretary of the Departments of the Interior, Defense, Energy, Agriculture, and Commerce to designate corridors for oil, gas, hydrogen pipe and electric transmission lines on federal land in the 11 western states, perform necessary reviews, and incorporate those designations into land use, land management or equivalent plans. Implementing this section, the *Approved Resource Management Plan/Record of Decision for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States* signed January 14, 2009, established corridors (generically identified as "Section 368 corridors" and specifically identified by a numerical reference) pursuant to Section 368 of the Energy Policy Act of 2005.

Western Solar Plan

The Departments of the Interior and Energy identified Solar Study Areas determined to have high potential for development of solar energy facilities. After the release of these maps, the BLM filed an application for withdrawal with the Secretary of the Interior that identified 676,048 acres of land in Arizona, California, Colorado, Nevada, New Mexico, and Utah to be "withdrawn from settlement, sale, location or entry under the general land laws, including the mining laws, on behalf of the BLM to protect and preserve solar energy study areas for future solar energy development" (BLM, 2011). The BLM issued the Final Programmatic EIS for Solar Energy Development in those six states in July 2012 and signed the associated Record of Decision on October 12, 2012. The Western Solar Plan analyzed two alternative plans for managing solar energy development on BLM-administered public lands in the six-state study area. One of these plans, called the Western Solar Plan, was adopted through the Approved Resource Management Plan Amendments/ROD for Solar Energy Development in Six Southwestern States in October 2012. As part of the Western Solar Plan, the BLM identified priority development areas called solar energy zones (SEZs) to preserve these sites for future solar energy development (U.S. DOE and BLM, 2013). Included in this amendment was the Riverside East SEZ in Riverside County. The project site is located in this SEZ but the Project is not subject to the Western Solar Plan (see Section 1.5.2, Relationship to the Western Solar Plan). SEZs are "developable" areas for solar power development.

Desert Renewable Energy Conservation Plan (DRECP)

The Desert Renewable Energy Conservation Plan is a collaboration between the California Energy Commission, California Department of Fish and Game, Bureau of Land Management, and the U.S. Fish and Wildlife Service. The Record of Decision for the DRECP Land Use Plan Amendment was signed in 2016. The DRECP is intended to facilitate the development of utility-scale renewable energy and transmission projects in the Mojave and Colorado deserts in California to reach federal and state energy targets while conserving sensitive species and habitats as well as cultural, scenic, and social resources. The BLM published the Land Use Plan Amendment (LUPA) and Final EIS for the DRECP in November 2015. The Record of Decision for the DRECP LUPA was signed in September of 2016. The LUPA applies to nearly 11,000,000 acres of BLM-managed federal lands. The DRECP has amended the California Desert Conservation Area (CDCA) Plan and the Bishop and Bakersfield Resource Management Plans (BLM, 2015). The Palen Solar Project is located within an area designated as a Development Focus Area but is not subject to the DRECP Record of Decision; see Section 1.5.3 in the Introduction.

Riverside County General Plan

Riverside County updated the General Plan in 2015 and covers the entire unincorporated portion of the County. The goal of the General Plan is to manage the overall pattern of development more effectively. Private land is located immediately west of the Palen Solar Project and there are two inholdings along the eastern boundary of the Project but the Project would not involve the use of any private land. The General Plan designation for all the private land surrounding the Palen Solar Project is Open Space with the private farm west of the Project designated as Open Space Rural. The Open Space Rural land use designation is applied to remote, privately owned

open space areas with limited access and a lack of public service. The Open Space Rural policies include:

LU 26.1 Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.

LU 26.2 Require that adequate and available circulation facilities, water resources, sewer facilities, and/or septic capacity exist to meet the demands of the proposed land use.

LU 26.3 Ensure that development does not adversely impact the open space and rural character of the surrounding area.

LU 26.4 Encourage parcel consolidation.

LU 26.5 Provide programs and incentives that allow Open Space-Rural areas to maintain and enhance their existing and desired character.

LU 26.6 Encourage clustered development where appropriate on lots smaller than 20 acres. [...]

3.6.2 Existing Conditions

The CDCA Plan, As Amended (1980), designates the project area as Multiple-Use Class (MUC) M (Moderate Use). In 2016, the DRECP Record of Decision has since removed this classification from the project area; it is now classified as a Development Focus Area (DFA). DFAs are BLM lands on which activities related to solar, wind, and geothermal development, operation, and decommissioning can occur (BLM, 2015). Because the Proposed Action was an eligible pending application prior to the signing of the DRECP ROD, the Project is not subject to the DRECP and, this analysis considers the site as MUC M.

Interstate-10 lies within a Section 368 corridor identified as "Corridor 30-52, 2 miles in width" that overlies locally designated Corridor K (2 miles in width), see Figure 3.6-1, Proposed Action and Designated Utility Corridors. These corridors lie south of the proposed site on a generally east-west heading. Numerous linear ROWs lie within and to the north and south of these two designated overlapping corridors (BLM, 2011).

Several transmission lines are located within the designated corridors (see Figure 3.6-1, Proposed Action and Designated Utility Corridors). The transmission lines include the Devers–Palo Verde No. 1 (DPV1) Transmission Line, the Devers–Colorado River (DCR) Transmission Line, and the Blythe Energy Project Transmission Line, all of which are located south of I-10.

- DPV1 is a 500 kV transmission line that spans across approximately 128 miles of land within California and parallels I-10.
- DCR is a 500 kV transmission line that parallels DPV1 and is located along the south side of I-10 (BLM, 2011).
- The Blythe Energy Project Transmission Line is a 67.4-mile-long 230 kV transmission line between the Buck Substation (southwest of Blythe) and the Julian Hinds Substation (west of Desert Center) and 6.7 miles of 230 kV transmission lines between Buck Substation and DPV1. It is located along I-10 and is north of DPV2 (CEC, 2016).

- Southern California Edison's (SCE) existing 161 kV Eagle Mountain–Blythe power line runs in a northwesterly direction across the southwest portion of the proposed project site, and a portion of the Eagle Mountain FERC project's transmission withdrawal also runs through this area.

The project site is also near gen-tie lines for the existing Desert Sunlight Solar Farm and the Desert Harvest Solar Farm. The Project would tie into the existing SCE Red Bluff Substation with its own 230 kV line where several other existing and potential renewable projects interconnect.

The small community of Desert Center is located approximately 10 miles west of the site, along I-10. As part of the Riverside County General Plan Update (2015), the County updated the Desert Center Area Plan. The Desert Center Land Use Plan reflects the limited development potential in this region. The majority of the area is designated Open Space-Rural, with some Agriculture, rural residential, and other low-density residential and commercial opportunities. The Area Plan notes that future development on the private land should focus on infill and contiguous expansion of the existing communities at Desert Center and Lake Tamarisk but is likely to be limited (Riverside County, 2015).

One residence is located approximately 25 feet from the northwest corner of the proposed right-of-way boundary. Another residence is located approximately 3,500 feet northwest of the project site boundary. Both these residences are located within an existing date palm orchard on land designated as Open Space Rural in the County General Plan (2015).

3.7 Mineral Resources

This section describes the baseline conditions pertaining to mineral resources for the Palen Solar Project. The analyses of mineral resources impacts for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 California Energy Commission (CEC) Revised Staff Assessment (RSA) for the PSPP, Section D.2, Geology, Paleontology, and Minerals.
- For CEQA, the 2013 CEC Final Staff Assessment (FSA) for the PSEGS (solar power rower analysis), Section 5.2, Geology and Paleontology.
- For CEQA, the 2014 CEC Revised Presiding Member's Proposed Decision for the PSEGS.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.8, Mineral Resources.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.8, Mineral Resources.

The affected environment and regulatory information presented in the documents listed above was reviewed and determined to still be current and accurate for analysis of impacts to mineral resources. It is repeated or summarized in this section. No additional information has been incorporated into the description of the affected environment.

3.7.1 Regulatory Framework

Federal

General Mining Act of 1872. This act authorizes and governs prospecting and mining for economic minerals, such as gold, platinum, and silver, on federal public lands. Under the Act, all citizens of the United States of America 18 years or older have the right under to locate a lode (hard rock) or placer (gravel) mining claim on federal lands open to mineral entry. These claims may be located once a discovery of a locatable mineral is made. Locatable minerals include but are not limited to platinum, gold, silver, copper, lead, zinc, uranium, and tungsten.

Mineral Leasing Act of 1920. This act authorizes and governs leasing of public lands for the development of deposits of coal, oil, gas and other hydrocarbons; sulfur in Louisiana and New Mexico; phosphate; potassium; and sodium. Section 185 of this title contains provisions relating to granting of rights-of-ways over Federal lands for pipelines for the transportation of oil, natural gas, synthetic liquid, or gaseous fuels, or any refined product produced from these sources.

Mineral Materials Act of 1947. This act authorizes the Secretary of the Interior to dispose of mineral materials (including but not limited to, common varieties of sand, stone, gravel, pumice, pumicite, cinders, and clay) and vegetative materials (including, but not limited to, yucca, manzanita, mesquite, cactus, and timber or other forest products) on public lands by sale or free use. All money received from the disposal of these materials under this Act are to be used in the same manner as money received from the sale of public lands.

Mining and Mineral Policy Act of 1970. This act declared that the federal government policy is to encourage private enterprise in the development of a sound and stable domestic mineral industry and in orderly and economic development of mineral resources, research, and reclamation methods.

State

State Surface Mining and Reclamation Act (SMARA) of 1975. The Surface Mining and Reclamation Act of 1975 (SMARA) mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the State subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed the State Mining and Geology Board (SMGB), after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. Mineral lands are mapped according to jurisdictional boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System. The State Geologist classifies lands as Mineral Resource Zones (MRZs) of varying significance (DOC, 2016).

The objective of classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or of regional significance are available when needed. The SMGB, based on recommendations from the State Geologist and public input, prioritizes areas to be classified and/or designated. Areas which are generally given highest priority are those areas within the State which are subject to urban expansion or other irreversible land uses which would preclude mineral extraction (DOC, 2016).

3.7.2 Existing Conditions

Mineral Resources Potential

As discussed in Section C.9.4.1 of the 2010 RSA, a preliminary geotechnical investigation including 13 exploratory borings and eight test pits was completed for the general area of the project site. The preliminary geotechnical investigation reveals that the project site is underlain by alluvial and eolian deposits of Pleistocene through Holocene age, which consist of dune sands, alluvium and lake deposits to the depths explored (approximately 76.5 feet below ground surface). These units are listed and described below:

- **Dune Sand (Qs),** fine grained sand and silt deposited by wind. These deposits occur on the surface primarily in the northern portion of the site but buried dune deposits were observed in test pits in the southern part of the site.
- **Alluvium (Qal),** fine to medium sand with silt and gravel. In general, the alluvium will be coarser grained towards the south and fine towards the lake bed, but interfingering of alluvial layers and fine grained lake deposits should be anticipated at depth.
- **Lake deposits (Ql),** alternating layers of fine grained clay, silt, and sand deposits with varying mixtures of fine gravel.

The project site surface contains unconsolidated soils due to desiccation and/or wind deposition to a maximum depth of 2 feet below ground surface. The soils below the surficial materials are generally medium dense to very dense poorly graded materials (described above) with varying amounts of silt, silty sand and clayey sand. Firm to very hard sandy clays are locally present as interbedded layers 5 to 10 feet thick at depths generally greater than 25 feet below ground surface.

The project site is mapped as Mineral Resource Zone (MRZ)-4 (CDMG, 1994), which identifies "areas of no known mineral occurrences where geologic information does not rule out either the presence or absence of industrial mineral resources." Therefore, no economically viable mineral deposits are known to be present at the site, and no mines are known to have existed within the project site boundary.

Locatable Minerals

There are no active mining claims within the project site boundary nor is there any locatable mineral activity within the project area (BLM, 2015). Many inactive mines and mineral prospects are hosted by metamorphic and intrusive basement rocks within 10 miles of the proposed project boundary, primarily in the Palen and Chuckwalla Mountains. These historically produced a number of precious and base metals, including iron (magnetite). Minor gold, silver, copper and uranium prospects are located in the Palen Mountains northeast of the project site (BLM, 2011). Based on the geological environment and historical trends, the potential for occurrence of locatable minerals is low within the project area (BLM, 2011).

Leasable Minerals

There are no active mineral leases within the project site or surrounding area (BLM, 2015). The While the PSPP FEIS stated that the region encompassing the project area was leased for oil and gas and geothermal resources in the past (1980 – 1988), the western Riverside County area has no history of oil and gas or geothermal exploration or development. The potential for these resources to be present is considered to be low.

The BLM's Prospectively Valuable maps for leasable minerals show low potential within the project site for the occurrence of oil and gas, oil shale or tar sands, coal, sodium, potassium and phosphate.

Saleable Minerals/Mineral Materials

Sand and gravel deposits are ubiquitous throughout the project area and the region. The nearest gravel borrow pits are located approximately 10 miles west of the proposed site in Desert Center. The presence of alluvial materials at the site location means that the property could potentially be accessed and developed as a source of sand and gravel. Any such use of sand or gravel materials on or near the site for commercial sale or for use of the Project's own construction needs would require proper permitting for use of the material.

3.8 Multiple Use Classes

This section describes the BLM's multiple use classification system that applies to the Palen Solar Project site, as well as proposed changes to the BLM's land use designations within the planning area. The analyses of multiple use classes impacts for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.9, Multiple Use Classes.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.9, Multiple Use Classes.

The affected environment and regulatory information presented in this section relies on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates information on the applicability of the 2016 Desert Renewable Energy Conservation Plan Record of Decision. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

3.8.1 Regulatory Framework

As stated in the PSPP PA/FEIS and PSPP RSA, the project site is located within the planning area for the California Desert Conservation Area (CDCA) Plan, which was developed by the BLM under Section 601 of the Federal Land Policy Management Act (FLPMA). The purpose of the CDCA Plan is to "provide for the immediate and future protection and administration of the public lands in the California desert within the framework of a program of multiple use and sustained yield, and the maintenance of environmental quality" (BLM, 2001). Section 103 of the FLPMA defines the term "multiple use" as the management of the public lands and resource values so that, among other things, they are used in "a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific and historical values" (BLM, 2001).

The CDCA Plan includes a classification system that places BLM-administered public lands within the planning area into one of four multiple use classes, based on the sensitivity of the resources and types of uses for each geographic area. The class designations govern the type and degree of land-use actions allowed within the areas defined by class boundaries. The Proposed Action is located within a "Multiple Use Class M (Moderate Use)" land use designation.

In November 2015, the BLM released a Final EIS for the DRECP Land Use Plan Amendment (LUPA) that reviewed existing land use designations within the CDCA and would eliminate the existing land use classification system. The Record of Decision for the DRECP LUPA was signed in September 2016 and the CDCA Plan was amended. Under the DRECP LUPA, absent the EDF RE's pending application, the project site would be within a Development Focus Area (DFA), which is an area with high-quality solar, wind and geothermal energy potential, access to transmission, and would allow impacts to be managed and mitigated (BLM, 2015). DFAs are areas where renewable development, operation, and decommissioning would be covered under the DRECP.

Because EDF RE's application was filed before June 30, 2009 (filed March 14, 2007), however, the DRECP recognizes it as a qualifying pending application and notes that "land use plan decisions made in the DRECP ROD will not affect [qualified pending] project applications." As such, BLM is assessing the PSP as if still within Multiple Use Class M (MUC-M) lands.

3.8.2 Existing Conditions

As described in the PSPP PA/FEIS and PSPP RSA, the project site is located within the CDCA Plan MUC-M land use designation. This class provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development. Management within MUC-M is also designed to conserve desert resources and to mitigate damage to those resources which permitted uses may cause (BLM, 2011). Per the CDCA Plan, solar energy generation facilities may be allowed on Class M land after NEPA requirements are met and for a project site not currently identified as being associated with power generation, after an amendment to the CDCA Plan to identify the site as eligible for solar power generation.

Table 3.8-1 summarizes the resource management guidelines for MUC-M that are applicable to the Proposed Action.

Table 3.8-1. Project-Related Resource Management Guidelines for MUC-M

Land Uses Applicable to the Project	MUC-M Guidelines
Electrical Generation Facilities	All types of electrical generation plants may be allowed in accordance with State, Federal, and local laws. Existing facilities may be maintained and upgraded or improved in accordance with special-use permits or by amendments to rights-of-way. ▪ Nuclear and Fossil Fuel may be allowed in accordance with Federal, State and local laws. ▪ Wind/Solar may be allowed after NEPA requirements are met. ▪ Geothermal may be allowed pursuant to licenses issued under 43 CFR Section 3250 et seq. NEPA requirements will be met.
Transmission Facilities	New gas, electric, and water transmission facilities and cables for interstate communication may be allowed only within designated corridors (see Energy Production and Utility Corridors Element). NEPA requirements will be met. Existing facilities within designated corridors may be maintained and upgraded or improved in accordance with existing rights-of way grants or by amendments to right-of-way grants. Existing facilities outside designated corridors may only be maintained but not upgraded or improved.
Communication Sites	New sites may be allowed. NEPA requirements will be met. A 30-day public comment period is required for environmental assessments for long distance line-of-site communication systems of three or more sites. Existing facilities may be maintained and utilized in accordance with right-or-way grants and applicable regulations.

Table 3.8-1. Project-Related Resource Management Guidelines for MUC-M

Motorized-Vehicle Access/Transportation	Motorized-vehicle use will be allowed on "existing" routes of travel unless closed or limited by the authorized officer. New routes may be allowed upon approval of the authorized officer. Vehicle use on some major significant dunes and dry lakebeds may be is allowed (see Motorized Vehicle Access Element). Periodic or seasonal closures or limitations of routes of travel may be required. Access will be provided for mineral exploration and development. Railroads and trams may be allowed. Airports and landing strips may be allowed by lease subject to conformance with county or regional airport loans and FAA and DOD approval.
Waste Disposal	Public lands managed by BLM may not be used for hazardous or non-hazardous waste disposal. Where locations suitable for such disposal are found on BLM managed lands, consideration will be given to transfer of such sites to other ownership for this use. This amendment applies to waste normally handled through landfills or other waste management facilities. It does not apply to mining waste, including tailings and/or chemicals used in processing ore.

Source: BLM, 2011, Table 3.9-2.

3.9 Noise

The previous analyses of impacts to noise for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.7, Noise and Vibration (pages C.7-5 through C.7-6).
- The NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.10, Noise (pages 3.10-1 through 3.10-3).

The affected environment and regulatory information presented in the documents listed above was reviewed and determined to still be current and accurate for analysis of noise impacts. It is repeated or summarized in this section. No additional information has been incorporated into the description of the affected environment.

Fundamentals of Noise

To describe environmental noise and to assess project impacts on areas that are sensitive to community noise, a measurement scale that simulates human perception is used. The A-weighting scale of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. Table 3.9-1 provides a description of technical terms related to noise.

Table 3.9-1. Definition of Technical Terms Related to Noise

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter deemphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
Equivalent Noise Level, Leq	The energy averaged A-weighted noise level during the noise level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 4.8 decibels to levels in the evening from 7 p.m. to 10 p.m., and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Table 3.9-1. Definition of Technical Terms Related to Noise

Terms	Definitions
Pure Tone	A pure tone is defined by the Model Community Noise Control Ordinance as existing if the one-third octave band sound pressure level in the band with the tone exceeds the arithmetic average of the two contiguous bands by 5 decibels (dB) for center frequencies of 500 Hz and above, or by 8 dB for center frequencies between 160 Hz and 400 Hz, or by 15 dB for center frequencies less than or equal to 125 Hz.

Source: BLM, 2011 and CEC, 2010.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period (Leq), or by average day and night A-weighted sound levels with a nighttime weighting of 10 dBA (Ldn). Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45 to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. Typical Ldn values might be 35 dBA for a wilderness area, 50 dBA for a small town or wooded residential area, 65 to 75 dBA for a major metropolis downtown (e.g., San Francisco), and 80 to 85 dBA near a freeway or airport. Although higher noise levels often occur within densely populated urban areas, community noise levels can still be adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about 7 decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects. At 70 dBA, sleep interference effects become considerable (CEC, 2010). Table 3.9-2 presents common noises and their associated sound levels in dBA.

Table 3.9-2. Typical Environmental and Industry Sound Levels

Noise Source (at distance)	A-Weighted Sound Level in Decibels (dBA)	Noise Environment	Subjective Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		Very Loud
Very Loud Music	110	Rock Music Concert	
Pile Driver (50')	100		
Ambulance Siren (100')	90	Boiler Room	
Pneumatic Drill (50')	80	Kitchen with garbage disposal running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Department Store/Office	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	10		Threshold of hearing

Source: CEC, 2010.

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category.

With regard to increases in A-weighted noise levels, knowledge of the following relationships can be helpful in understanding the significance of human exposure to noise (CEC, 2010).

- Except under special conditions, a change in sound level of one dB cannot be perceived.
- Outside of the laboratory, a 3 dB change is considered a barely noticeable difference.
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected.
- A 10 dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy creates a 3 dB increase (i.e., the resultant sound level from two identical automobiles passing simultaneously is the sound level from a single passing automobile plus 3 dB). Additionally, sounds naturally attenuate over distance based on the divergence of the sound waves radiating outward from the point of the source. Doubling the distance from a single stationary noise source reduces the sound pressure level by 6 dB to 7.5 dB, with the most attenuation over ground surfaces that are absorptive or "soft" with dirt, grass, or scattered bushes (Caltrans, 2009). Increasing the distance from a single stationary noise source by a factor of ten reduces the sound pressure level by 20 dB.

3.9.1 Regulatory Framework

Various federal, state, and local agencies have developed guidelines for evaluating land use compatibility under different noise level ranges. The federal Noise Control Act of 1972 (Public Law 92-574) established a requirement that all federal agencies must administer their programs in a manner that promotes an environment free from noise that jeopardizes public health or welfare. The United States Environmental Protection Agency (USEPA) was given the responsibility for: providing information to the public regarding identifiable effects of noise on public health or welfare, publishing information on the levels of environmental noise that will protect the public health and welfare with an adequate margin of safety, coordinating federal research and activities related to noise control, and establishing federal noise emission standards for selected products distributed in interstate commerce. The federal Noise Control Act also directed all federal agencies to comply with applicable federal, State, interstate, and local noise control regulations to the same extent that any person is subject to such requirements.

Guidelines are available from the USEPA to assist state and local government entities in developing state and local regulations for noise. Because there are existing local regulations that apply to this project, the USEPA guidelines are not applicable.

Under the Occupational Safety and Health Act of 1970 (29 USC § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration, (OSHA) adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers hearing to detect any degradation. The highest permissible noise level in the OSHA regulations to protect workers is 90 dBA over an 8-hour exposure.

The Federal Transit Administration (FTA) has published guidelines for assessing the impacts of ground-borne vibration associated with construction of rail projects, which have been applied by other jurisdictions to other types of projects. The FTA-recommended vibration standards are expressed in terms of the peak particle velocity (PPV), which measured in terms of inches per second of ground movement, and a vibration-decibel (VdB) metric of relative velocities. According to FTA guidelines, a vibration level of 65 VdB is the threshold of perceptibility for humans exposed to the frequent vibration near rail transit systems, and for infrequently recurring levels, such as those from construction activities having fewer than 30 vibration events of the same kind per day, over 80 VdB would be expected to cause residential annoyance (FTA, 2006).

The California Governor's Office of Planning and Research maintains published guidelines for the noise element of local general plans. These guidelines include a noise level/land use compatibility chart that categorizes outdoor CNEL/Ldn levels into as many as four compatibility categories (normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable), depending on land use. For many land uses, the chart shows overlapping CNEL/Ldn ranges for two or more compatibility categories.

The noise element guidelines chart identifies the normally acceptable range for low-density residential uses as CNEL/Ldn values less than 60 dB, while the conditionally acceptable range is 55 to 70 dB. The normally acceptable range for high-density residential uses is identified as CNEL/Ldn values below 65 dB, while the conditionally acceptable range is identified as 60 to 70 dB. For educational and medical facilities, CNEL/Ldn values below 70 dB are considered normally acceptable, while values of 60 to 70 dB are considered conditionally acceptable. For office and commercial land uses, CNEL/Ldn values below 70 dB are considered normally acceptable, while values of 67.5 to 77.5 dB are categorized as conditionally acceptable. The overlapping CNEL/Ldn ranges are intended to indicate that local conditions (existing noise levels and community attitudes toward dominant noise sources) should be considered in evaluating land use compatibility at specific locations.

The California Occupational Safety and Health Administration (Cal-OSHA) has promulgated occupational noise exposure regulations (Cal. Code Regs., tit. 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to federal OSHA standards.

The Project is located within Riverside County. The Noise Element of the Riverside County General Plan (Riverside County, 2015) and the Riverside County Noise Ordinance (Riverside County, 2007) apply to this project.

Riverside County Noise Element

The County's guidelines on Land Use Compatibility for Community Noise Exposure, provided in the Noise Element, are used to evaluate potential noise impacts and provide criteria for environmental impact findings and conditions for project approval. Land use compatibility defines the acceptability of a land use in a specified noise environment. The Noise Element of the Riverside County General Plan (Riverside County, 2015) identifies noise-sensitive land uses to include:

- Schools
- Rest homes
- Mental care facilities
- Places of worship
- Hospitals
- Long-term care facilities
- Libraries
- Passive recreation uses

Riverside County has adopted the land use compatibility criteria summarized in Table 3.9-3 as part of the Noise Element of the County General Plan.

Table 3.9-3. Riverside County Land Use Compatibility Standards

	CNEL or Ldn Noise Level			
Land Use	**Normally Acceptable**	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Residential – Low-density (single-family, duplex, mobile homes)	Up to 60 dBA	55–70 dBA	70–75 dBA	Over 75 dBA
Residential – Multiple-family	Up to 65 dBA	60–70 dBA	70–75 dBA	Over 75 dBA
Transient lodging, motels, hotels	Up to 65 dBA	60–70 dBA	70–80 dBA	Over 80 dBA
Schools, libraries, churches, hospitals, nursing homes	Up to 70 dBA	60–70 dBA	70–80 dBA	Over 80 dBA
Auditoriums, concert halls, amphitheaters	Category not used	Up to 70 dBA	Over 65 dBA	Category not used
Sports arenas, outdoor spectator sports	Category not used	Up to 75 dBA	Over 70 dBA	Category not used
Playgrounds, neighborhood parks	Up to 70 dBA	Category not used	67.5–75 dBA	Over 72.5 dBA
Golf courses, riding stables, water recreation, cemeteries	Up to 75 dBA	Category not used	70–80 dBA	Over 80 dBA
Office buildings, business commercial, professional	Up to 70 dBA	67.5–77.5 dBA	Category not used	Over 75 dBA
Industrial, manufacturing, utilities, agriculture	Up to 75 dBA	70 – 80 dBA	Category not used	Over 75 dBA

Source: Riverside County, 2015 – Table N-1.

The Noise Element of the Riverside County General Plan includes numerous policies intended to minimize noise-related conflicts between adjacent types of land uses. Temporary construction activities are guided by the following policies:

- *N 13.1 Minimize the impacts of construction noise on adjacent uses within acceptable practices.*

- *N 13.2 Ensure that construction activities are regulated to establish hours of operation in order to prevent and/or mitigate the generation of excessive or adverse noise impacts on surrounding areas.*
- *N 13.4 Require that all construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.*

The Noise Element of the County General Plan also identifies preferred noise standards for stationary noise sources that affect residential land uses, as shown in Table 3.9-4.

Table 3.9-4. Stationary Source Land Use Noise Standards

Land Use	Time of Day	Interior Noise Standard	Exterior Noise Standard
Residential	10:00 p.m. to 7:00 a.m.	40 Leq, 10-minute	45 Leq, 10-minute
Residential	7:00 a.m. to 10:00 p.m.	45 Leq, 10-minute	65 Leq, 10-minute

Note: The Noise Element of the General Plan indicates that these levels are preferred standards; final decision will be made by the Riverside County Planning Department and Office of Public Health.
Source: Riverside County, 2015 – Table N-2.

Vibration. Ground-borne vibrations can be a source of annoyance to people or a source of structural damage to some types of buildings. Although vibration measurements can be presented in many different forms, peak particle velocity (PPV) is the unit of measure used most often to assess building damage potential. Table 3.9-5 describes human reaction to typical vibration levels.

Table 3.9-5. Human Reaction to Typical Vibration Levels

Vibration Level PPV (inches/second)	Human Reaction
0.0059–0.0188	Threshold of perception, possibility of intrusion
0.0787	Vibrations readily perceptible
0.0984	Continuous vibration begins to annoy people
0.1968	Vibrations annoying to people in buildings
0.3937–0.5905	Vibrations considered unpleasant when continuously subjected and unacceptable by some walking on bridges

Source: Caltrans data as presented by Riverside County, 2015; Table N-3.

The Noise Element of the Riverside County General Plan includes consideration of ground-borne vibrations. The following land uses are identified by the noise element as being vibration sensitive:

- Hospitals,
- Residential areas,
- Concert halls,
- Libraries,
- Sensitive research operations,
- Schools, and
- Offices.

Riverside County Noise Ordinance

The County Noise Ordinance allows for different levels of acceptable noise depending upon land use. The Noise Ordinance or Ordinance No. 847 (Regulating Noise) is incorporated in the County Code as Chapter 9.52 (Noise Regulation). The applicable standards in Chapter 9.52.040 and also Section 4 of Ordinance No. 847 limit noise sources on any property from causing excessive exterior noise on any other nearby occupied property. The maximum decibel level standards depend

on the receiving land use, such that sound levels in a low-density "Rural Community" shall not exceed 55 dBA Lmax during the daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA during the nighttime hours (10:00 p.m. to 7:00 a.m.). As noted in Section 3.6 (Lands and Realty), the General Plan (2015) Land Use designation for the private land adjacent to the Palen Solar Project is Open Space–Rural. These County standards protect the noise-sensitive receptors within the very low-density rural area surrounding the project site.

The following construction activities are exempt from the provisions of the noise ordinance:

- Private construction projects located a quarter mile or more from the nearest inhabited dwelling;
- Private construction projects located within a quarter mile of an inhabited dwelling provided that construction activities are limited to 6:00 a.m. to 6:00 p.m. during the months of June through September and are limited to 7:00 a.m. to 6:00 p.m. during the months of October through May.

Exceptions to the noise standards can be requested for construction-related reasons.

3.9.2 Existing Conditions

The project site is located in the Colorado Desert in the eastern part of Riverside County, approximately 0.5 miles north of Interstate 10 (I-10) at the Corn Springs Road intersection. The site is in an area of primarily undeveloped land, with open space and some land developed as a palm date nursery on the western border of the site. The small community of Desert Center is located approximately 10 miles west of the site, along I-10. The predominant noise source in proximity to the project site is vehicular traffic on I-10. Locations away from I-10 experience very low levels of noise (BLM, 2011).

Noise-Sensitive Receptors

Sensitive noise receptors are places where quiet is necessary for the intended use of the land, such as residential areas where noise can interfere with sleep, concentration, and communication, and where excessive noise can cause physiological and psychological stress and hearing loss. In addition, wildlife management areas where breeding could be disturbed are considered sensitive receptors to noise. In the Riverside County Noise Ordinance and Noise Element, "noise-sensitive" land uses include but are not limited to residences, schools, hospitals, churches, rest homes, cemeteries or public libraries.

One residence is located approximately 25 feet from the northwest corner of the proposed right-of-way boundary. Another residence is located approximately 3,500 feet northwest of the project site boundary. Both these residences are located within an existing date palm orchard (BLM, 2011).

The bighorn sheep Wildlife Habitat Management Area (WHMA), approximately 2.5 miles northeast of the site, is a sensitive noise receptor due to the presence of breeding Nelson's bighorn sheep. Sensitive bird nesting habitat also occurs in adjacent creosote scrub and desert dry wash woodland.

Ambient Noise

The baseline noise sources and ambient noise conditions in the proximity of the Palen site have not changed since the period of initial environmental review seven years ago. In 2009, ambient noise levels were measured near the western boundary of the site, near the two residences on May 18 to May 19, 2009. One long-term measurement was taken at the two nearest residences over a 25-hour period between 6:51 p.m., May 18, and 7:51 p.m., May 19, 2009 (see Table 3.9-6). The survey was performed using standard acoustical measurement techniques. No new source of noise has been introduced to the surroundings, and the I-10 remains the main source of noise.

Table 3.9-6. Summary of Measured Noise Levels, dBA

Measurement Sites	Average During Daytime hours (Leq)	Average During Nighttime hours (Leq)
LT1, Nearest Residence	43[1]	34[2]
LT2, Second Nearest Residences	43[1]	34[2]

1 - Energy Commission calculations of average of the daytime hours.
2 - Energy Commission calculations of average of the nighttime hours.
Source: BLM, 2011 and CEC, 2010.

3.10 Paleontological Resources

This section describes the existing paleontological resources and the possibility of discovery of fossil resources within the area where the Proposed Action and alternatives would be implemented. The project study area for paleontology encompasses all resources that could be affected by ground disturbance related to the construction and operation of the Palen Solar Project (PSP). The analyses of impacts on paleontological resources for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section D.2, Geology, Paleontology, and Minerals.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.11, Paleontological Resources.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.11, Paleontological Resources.

The affected environment and regulatory information presented in the documents listed above was reviewed and determined to still be current and accurate for analysis of impacts to paleontological resources. It is repeated or summarized in this section. The following discussion is primarily excerpted from PSPP SA/FEIS Section 3.11 (Paleontological Resources). Please see that section for full citations. No additional information has been incorporated into the description of the affected environment.

The project site is located entirely on undisturbed, BLM-administered federal land. The Paleontological Resources Preservation Act of 2009 requires the BLM to manage and protect paleontological resources on Federal land using scientific principles and expertise. The term "paleontological resource" means any fossilized remains, traces, or imprints of organisms, reserved in or on the earth's crust, that are of paleontological interest and that provide information about the history of life on earth, except that the term does not include: (a) any materials associated with an archaeological resource (as defined in section 3(1) of the Archaeological Resources Protection Act of 1979 (16 USC 470bb(1)); or (b) any cultural item (as defined in section 2 of the Native American Graves Protection and Repatriation Act (25 USC 3001).

Paleontological resources are considered nonrenewable resources because most of the organisms they represent no longer exist. Once destroyed, these resources can never be replaced. The potential for discovery of significant paleontological resources or the impact of surface disturbing activities to such resources is assessed using the Potential Fossil Yield Classification (PYFC) system. This system includes three conditions: Condition 1 (areas known to contain vertebrate fossils); Condition 2 (areas with exposures of geological units or settings that have high potential to contain vertebrate fossils); and Condition 3 (areas that are very unlikely to produce vertebrate fossils). The PYFC class ranges from Class 5 (very high) for Condition 1 to Class 1 (very low) for Condition 3 (CEC RSA, 2010).

3.10.1 Regulatory Framework

Paleontological resources are afforded protection under state and federal environmental laws, and most notably by the 1906 Federal Antiquities Act, the 2009 Paleontological Resources Preservation Act (PRPA), other subsequent federal legislation and policies, and by the State of California's Environmental Quality Act (CEQA, Section 15064.5). Professional standards for assessment and mitigation of adverse impacts on paleontological remains have been established by the Society of Vertebrate Paleontology.

Federal

Paleontological Resources Preservation Act of 2009

The PRPA was signed into law as part of the Omnibus Public Lands Management Act (OPLMA) of 2009. The OPLMA-PRP requires the Secretary of the Interior to manage and protect paleontological resources on federal land using scientific principles and expertise, and requires the BLM to develop appropriate plans for inventorying, monitoring, and the scientific and educational use of paleontological resources, in accordance with applicable agency laws, regulations, and policies. Where possible, these plans should emphasize interagency coordination and collaborative efforts with non-federal partners, the scientific community, and the general public. The OPLMA-PRP is the new authority for the Department of the Interior (DOI) and USDA Forest Service for permits to collect paleontological resources, as well as curation of these resources in an approved repository.

Antiquities Act of 1906

The Antiquities Act was the first law enacted to specifically establish that archaeological sites on public lands are important public resources, and it obligated federal agencies that manage public lands to preserve the scientific, commemorative, and cultural values of such sites. This act does not refer to paleontological resources specifically; however, the act does provide for the protection of "objects of antiquity" (understood to include paleontological resources) by various federal agencies not covered by the OPLMA-PRP.

Federal Land Policy and Management Act of 1976 as Amended

The Federal Land Policy and Management Act of 1976 requires the Secretary of the Interior to retain and maintain public lands in a manner that protects the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric water resource, archeological and other values [Section 1701(a)(8)]. FLPMA also requires the BLM to develop regulations and plans for the protection of public land areas of critical environmental concern, "which include important historic, cultural or scenic values," and to protect life and safety from natural hazards.

Bureau of Land Management Plans and Guidelines

California Desert Conservation Area Plan

With respect to paleontological resources (discussed in the Cultural Resource Element), the CDCA Plan aims to: (1) ensure that paleontological resources are given full consideration in land use planning and management decisions, (2) preserve and protect a representative sample of the full

array of the CDCA's paleontological resources, and (3) ensure proper data recovery of significant paleontological resources where adverse impacts cannot be avoided or otherwise mitigated.

BLM National Instruction Memorandums (IM) 2008-009 and 2009-011

Instructional Memorandum (IM) 2008-009 formalizes the use of a new classification system for identifying fossil potential on public lands. The Potential Fossil Yield Classification (PFYC) system is based on the potential for the occurrence of significant paleontological resources in a geologic unit, and the associated risk for impacts to the resource based on federal management actions. Occurrences of paleontological resources are closely tied to the geologic units (i.e., formations, members, or beds) that contain them.

Using the PFYC system, geologic units are classified (Class 1 – Very Low through Class 5 – Very High) based on the relative abundance of vertebrate fossils or scientifically significant invertebrate or plant fossils and their sensitivity to adverse impacts, with a higher class number indicating a higher potential for adverse impacts. Although significant localities may occasionally occur in a geologic unit, a few widely scattered important fossils or localities do not necessarily indicate a higher class; instead, the relative abundance of significant localities is intended to be the major determinant for the class assignment. The PFYC system is used to set management policies and is not intended to be applied to specific paleontological localities or small areas within units.

As defined in IM 2009-011, Assessment and Mitigation of Potential Impacts to Paleontological Resources, Appendix A, a significant paleontological resource is any resource that is considered to be of scientific interest, including most vertebrate fossil remains and traces, and certain rare or unusual invertebrate and plant fossils. A significant resource is considered to be scientifically important because it is a rare or previously unknown species, it is of high quality and well-preserved, it preserves a previously unknown anatomical or other characteristic, provides new information about the history of life on earth, or has identified educational or recreational value. Paleontological resources that may be considered to not have paleontological significance include those that lack provenience or context, lack physical integrity because of decay or natural erosion, or that are overly redundant or are otherwise not useful for research.

BLM Manuals and Handbooks

BLM Manual 8270 and BLM Handbook H-8270-1 contain the agency's guidance for managing paleontological resources on public land. The manual has more information on the authorities and regulations related to paleontological resources. The handbook gives procedures for permit issuance, requirements for qualified applicants, information on paleontology and planning, and a classification system for potential fossil-bearing geologic formations on public lands. This classification system was superseded by IM-2008-009.

State

California Public Resources Code

Section 5097.5 specifies that any unauthorized removal of paleontological remains is a misdemeanor.

California Penal Code

Section 622.5 sets the penalties for damage or removal of paleontological resources.

Riverside County

Riverside County General Plan

The following policies outlined in the General Plan 2015 provide direction for paleontological resources:

OS 19.6 – Whenever existing information indicates that a site proposed for development has high paleontological sensitivity as shown on Figure OS-8, a paleontological resource impact mitigation program (PRIMP) shall be filed with the County Geologist prior to site grading. The PRIMP shall specify the steps to be taken to mitigate impacts to paleontological resources.

OS 19.7 – Whenever existing information indicates that a site proposed for development has low paleontological sensitivity as shown on Figure OS-8, no direct mitigation is required unless a fossil is encountered during site development. Should a fossil be encountered, the County Geologist shall be notified and a paleontologist shall be retained by the project proponent. The paleontologist shall document the extent and potential significance of the paleontological resources on the site and establish appropriate mitigation measures for further site development.

OS 19.8 – Whenever existing information indicates that a site proposed for development has undetermined paleontological sensitivity as shown on Figure OS-8, a report shall be filed with the County Geologist documenting the extent and potential significance of the paleontological resources on site and identifying mitigation measures for the fossil and for impacts to significant paleontological resources prior to approval of that department.

OS 19.9 – Whenever paleontological resources are found, the County Geologist shall direct them to a facility within Riverside County for their curation, including the Western Science Center in the City of Hemet.

3.10.2 Existing Conditions

Depending on the published report, the project site is located in either the southeastern portion of the Mojave Desert geomorphic province or the northeastern quarter of the Colorado Desert geomorphic province in the Mojave Desert of Southern California near the Arizona border (RSA, 2010). Geologically and geographically the area is more characteristic of the Mojave Desert geomorphic province. The Mojave Desert is a broad interior region of isolated mountain ranges which separate vast expanses of desert plains and interior drainage basins. The physiographic province is wedge-shaped and separated from the Sierra Nevada and Basin and Range geomorphic provinces by the northeast-striking Garlock Fault on the northwest side. The northwest-striking San Andreas Fault defines the southwestern boundary, beyond which lie the Transverse Ranges. The Colorado Desert geomorphic province lies to the south and east of the proposed project area. The topography and structural fabric in the Mojave Desert is predominately southeast to northwest, and is associated with mid-Miocene to recent faulting oriented similar to the San Andreas Fault. A secondary east to west orientation correlates with structural trends in the Transverse Ranges geomorphic province.

The project site would be situated on a broad alluvial plain within the northwest-trending Chuckwalla Valley between the Chuckwalla Mountains to the southwest, and the Palen Mountains to the northeast. Overall the proposed site slopes at very shallow grades north and northeast toward the local topographic low at Palen Dry Lake.

Quaternary age alluvial, lacustrine and eolian sedimentary deposits are mapped in the vicinity of the project site. The local stratigraphy as interpreted by different authors is presented in Table 3.10-1.

Table 3.10-1. Geology and Paleontology: Correlation and Ages of Stratigraphic Units

Age	Unit/Description	Jennings (CDMG 1967)	Stone & Pelka (USGS 2989)	Stone (USGS 1990)
Holocene	Eolian sands	Qs	Qs	Qs
	Younger alluvium	Qal	Qya	Qta
	Playa lake deposits	Ql	Qp	Qp
Pleistocene	Older Alluvium	Qc	Qia	Qta
			Qoa	

Holocene units, which include eolian sands, younger alluvium, and playa lake deposits, are mapped over nearly the entire project site surface. Eolian sands consist of unconsolidated deposits of well-sorted, wind-blown sand in dunes and sheets. Younger alluvium is composed of sand, pebbly sand and sandy pebble-gravel, and generally is coarser grained closer to mountain ranges. Desert varnish is not well developed in the mostly unconsolidated and undissected sediments. Playa lake deposits are also unconsolidated and are comprised of clay, silt and sand. Older alluvium is present at the surface along the southwestern edge of the project site.

The exposures of older alluvium occur as northeast-oriented ridges of material protruding into the site from the southwest, with the intervening areas occupied by drainages filled with younger alluvium. Older alluvium is composed of consolidated gravel and sand that is moderately dissected with moderately developed desert pavement and varnish.

Geological fieldwork by the USGS in the project vicinity indicates the subsurface near the northern site boundary is composed of moderately to thickly bedded sands, gravels, and clays to a depth of approximately 55 feet where a transition to overall clay dominated formation takes place and continues to the total depth of the borehole. The interbedded clays, sands, and gravels probably represent periods of primarily lakebed deposition interspersed with episodes of coarse sediment transport from the nearby Chuckwalla and Palen Mountains. A gravel dominated bed present from approximately 90 to 110 feet also attests to a period of clastic deposition during a period of primarily lakebed sedimentation. A water exploration well which was drilled in 1958 had a similar stratigraphic column with 48 feet of coarse alluvium overlying strata which are clay dominated to a depth of 818 feet bgs (CEC RSA, 2010).

Previous Studies in the Project Vicinity

A review of previous paleontological research conducted in the project vicinity showed that the region is poorly understood. Very few comprehensive studies have taken place, and few finds have been reported to local museums. As of 2009, at least three vertebrate fossil localities had

been previously recorded southwest of the project area within the same or similar sediments. LACM 5977, located east-southeast of the project area north of I-10 and on the southwest side of Ford Dry Lake, yielded fossilized remains of Perognathus (pocket mouse). LACM (CIT) 208 and LACM 3414, located north-northwest of the proposed project site between Eagle and Coxcomb Mountains, yielded fossilized remains of Gopherus (tortoise), Equus (horse), Camelops (camel) and Tanupolama stevensi (llama). Significant vertebrate fossil remains have often been discovered in this region from similar Pleistocene deposits at a depth of approximately 5 feet or more below the ground surface (SWCA, 2009).

The Riverside County Transportation and Land Management Agency (TLMA) has produced a paleontological sensitivity map of the county. The mapping indicates that areas underlain by Playa Lake, eolian and younger alluvial deposits within and around the Palen Dry Lake basin have a high paleontological sensitivity rating. Younger alluvium upslope from the lake bed has a low sensitivity rating, and older alluvium is assigned an undetermined sensitivity rating, according to the TLMA.

More recently, there has been an influx of paleontological information associated with the large energy projects proposed and under construction in the Chuckwalla Valley and the Palo Verde Mesa. Originally, the low number of finds in the project vicinity was interpreted as an indication of low sensitivity. However, paleontological field survey and construction monitoring associated with these large projects in the last decade have consistently identified significant paleontological resources in both surface and buried contexts. For example, during construction of the Genesis Solar Energy Project, paleontological monitors have found multiple vertebrate fossils, primarily tortoise carapace and bones (CEC PSA, 2013).

Initial studies conducted for the nearby Desert Sunlight Project originally deemed the site to be of low probability for encountering vertebrate fossils (low sensitivity). However since the recent breaking of ground, several specimens (identifiable fragments or individual bones) and numerous unidentifiable fragments have been found. The identifiable species include Smilodon (carpels, metacarpels, and distal end of ulna), a phalange of an undetermined cervidae sp., a camilid, tortoise, and several partials of small mammals and rodentia. The results of these recent studies suggest that the Chuckwalla Valley is more paleontologically sensitive than originally believed (CEC PSA, 2013).

Multiple studies have identified paleosols (old soil horizons) within the Quaternary alluvium of the region. These horizons formed slowly through mechanical and chemical erosion during wetter periods in the Late Pleistocene of the Colorado Desert. These conditions are very favorable for the preservation of fossils, especially short-lived species such as rodents. These paleosols have been identified below desert pavement in the southern Chuckwalla Valley, south of Interstate 10 near State Route 177 (CEC PSA, 2013), and at the Rio Mesa Solar Energy Generating Facility (Rio Mesa). In the paleontological assessment of the proposed Rio Mesa project it was found that at least two paleosols occur between six and seven feet below the modern ground surface of the Palo Verde Mesa (CEC PSA, 2013).

Palen Solar Power Project Studies (2009-2010)

Two paleontological studies were completed by the project proponent as part of the PSPP project: a record search and pedestrian survey (SWCA, 2009) and a preliminary geotechnical investigation Report (Kleinfelder, 2009). The preliminary geotechnical investigation included 13 exploratory

borings and eight test pits. This investigation revealed that the site is underlain by alluvial and eolian deposits of Pleistocene through Holocene age, which consist of dune sands, alluvium and lake deposits to the depths explored (approximately 76.5 feet below the existing ground surface). The project site is generally surfaced with unconsolidated soils due to desiccation and/or wind deposition to a maximum depth of 2 feet below the existing grade.

Near-surface geology beneath the project site consists primarily of Quaternary alluvium, eolian and lacustrine sediments which increases in age with depth from Holocene at the surface to Pleistocene and older at depth. Coarse-grained sediments grade laterally and are interbedded with lakebed deposits of similar ages. Pleistocene age older alluvium, which is exposed along the southwestern boundary of the site, underlies younger alluvium and lacustrine sediments. Older alluvium would likely be buried at progressively deeper depths beneath Holocene sediments to the northeast across the site.

In 2009, SWCA conducted a record search and pedestrian survey (SWCA, 2009; presented in this SEIS/EIR Appendix C-1). A review of museum collections records confirmed that no fossil localities had been previously recorded within the area that would be disturbed by PSPP construction and operation (and within which all Project facilities will be located), or within a 1-mile radius of the disturbance area. A comprehensive field survey of the PSPP disturbance area and 200-foot buffer was performed between May 25 and June 19, 2009. The entire Project area was relatively flat and scarcely to moderately vegetated. A transect survey of the entire study area was conducted using 25- to 50-meter intervals, with close examination of exposed cross-sections and drainages. The interval width used in any given area was determined based on the expected abundance of fossil materials in each area, based upon the recommendations of the museum records searches performed prior to the field survey, inspection of geologic and aerial maps, and visual observations made in the process of surveying. Both a handheld Garmin Global Positioning System (GPS) unit and a Trimble GeoXT GPS unit were used to ensure complete coverage of the project area. Upon discovery of any fossil materials, the exact location of each fossil was recorded on the Trimble unit and a variety of information was recorded for each specimen, including notes on the material on which it was found and a brief description of the specimen. A set of photographs were also taken at each fossil locality, including a photograph facing north, east, south, and west at the point at which the fossil was found, a view of the location at which the fossil was found from a short distance away, and two or more photographs of the specimen itself were taken. If warranted, the fossil was then collected by hand, wrapped in tissue paper, and placed within a plastic bag with a field label.

Within the PSPP site and associated linear alignments, the paleontological field survey recorded four nonsignificant fossil occurrences yielding petrified wood and one non-significant fossil point yielding nondiagnostic vertebrate material. All specimens were discovered ex situ (removed from their original place of fossilization) as lag deposits transported and unknown distance and re-deposited on top of alluvial sediments. For this reason, and due to the lack of diagnostic characteristics, none of the fossil resources discovered within the project site are considered significant. For the purposes of surface clearance, the vertebrate fossil specimen was collected and examined by a qualified vertebrate paleontologist to confirm that it was not identifiable. No petrified wood was collected throughout the course of the survey, but all occurrences were photo documented (SWCA, 2009).

Palen Solar Electric Generating Station (2013)

As much of the project area was the same as PSPP, only one supplementary paleontology study was prepared for the PSEGS project (Nials, 2013; presented in this SEIS/EIR Appendix C-2). As part of this study, two 200-foot-long 4-foot-deep trenches were recently excavated in the PSEGS project area. Theses trenches exposed Pleistocene alluvial fan sediments at depths varying from 28 to 40 inches below the existing surface. This study concludes that most of the project area is underlain to considerable depth by alluvial fan deposits not favorable for fossilization and preservation. These deposits tend to be coarse-grained, and represent high-energy depositional environments. Infiltration from infrequent rainfall and runoff is rapid, and deposits are subjected to repeated wetting and drying. The water table lies well below any potential depth of excavation for construction of the Project.

Previous surface paleontological surveys of the footprint area yielded no significant paleontological resources (SWCA, 2009). Some portions of the footprint area near the northern boundary and Palen Dry Lake do have increased potential for fossilization and in situ preservation. These include some parts of the Chuckwalla Sand Corridor (CSC) and Palen Dry Lake playa deposits. Although the bulk of the sand in the CSC was initially deposited prior to ca. 5,000 years ago, much has been eroded and re-deposited into dunes and aeolian landforms of relatively modern age. Relict dunes and sand sheets comprise parts of the CSC, and these deposits have some potential for fossil content. Late Pleistocene pluvial lakes appear never to have formed in the project footprint area, but there appears to be a long history of ephemeral playa lakes in Chuckwalla Valley, and Smith recorded more than 600 feet of playa sediments in cores from the Palen Dry Lake basin. Near-shoreline playa and littoral deposits are favorable environments for fossilization and preservation in some situations. Locations where relict Aeolian sediments or Palen Dry Lake playa-related deposits potentially lie within 5 feet or less of the surface are quite limited in the PSEGS project area and are confined to the northern and northeastern boundaries. Older, potentially fossiliferous, Plio-Pleistocene lacustrine/marine/estuarine sediments of the Bouse Formation are extensively present well below the modern surface in most areas of the Colorado River Valley, and outcrop in some mountain ranges north of Chuckwalla Valley. Bouse Formation deposits do not outcrop within the project area, and appear to have been tectonically lowered to several hundreds of feet or more below the modern surface in Chuckwalla Valley and nearby bolsons.

Paleontological Resources Assessment Results

The paleontological analysis for the PSP relies upon the studies conducted for the PSPP (SWCA, 2009) and PSEGS (Nials, 2013) projects described in detail above. In all, 3,094 acres of the PSP area has been surveyed for paleontological resources (see Figure 3.10-1, Paleontological Survey Coverage: Proposed Action, in Appendix A). Three of the five non-significant fossil occurrences identified during the PSPP pedestrian survey are within the PSP project area. However, southeastern portions of the project area and the proposed transmission line route, a total of 431 acres, have not yet been surveyed. The 2009 pedestrian survey concludes that although no significant paleontological resources were identified within the project area during the course of the field survey, the majority of the project site is underlain by geologic sediments determined to have a paleontological sensitivity ranging from low to high, increasing with depth. The 2013 trench excavation study suggests that the majority of the project area, with the exception of the northern boundary, consists of sediments that are not favorable for fossilization and preservation, and that while sensitive sediments may be present they are so deeply buried that the proposed project will not impact them.

3.11 Public Health and Safety

This section describes the baseline conditions pertaining to public health and safety, including hazardous materials/hazardous waste management, unexploded ordnance (UXO), abandoned mined lands (AML), transmission line safety and nuisance, traffic and transportation (including aviation) safety, worker safety and fire protection, public and private air strips/airfields, and geologic hazards for the Palen Solar Project. The analyses of impacts on public health and safety for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 California Energy Commission (CEC) Revised Staff Assessment (RSA) for the PSPP, Section C.5, Health and Safety.
- For CEQA, the 2013 CEC Final Staff Assessment (FSA) for the PSEGS (solar power tower analysis), Section 4.7, Public Health.
- For CEQA, the 2014 CEC Revised Presiding Member's Proposed Decision for the PSEGS.
- For NEPA, the PSPP (solar trough analysis): the 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.12, Public Health and Safety.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS) Section 3.12, Public Health and Safety.

The affected environment and regulatory information presented in this section relies on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated aircraft operations information. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

3.11.1 Regulatory Framework

Federal Regulations

U.S. Environmental Protection Agency (USEPA) was established in 1970 to consolidate in one agency a variety of Federal research, monitoring, standard-setting and enforcement activities to ensure environmental protection. The USEPA's mission is to protect human health and to safeguard the natural environment — air, water, and land — upon which life depends. The USEPA works to develop and enforce regulations that implement environmental laws enacted by Congress, is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Where national standards are not met, the USEPA can issue sanctions and take other steps to assist the states and tribes in reaching the desired levels of environmental quality.

Federal Aviation Administration (FAA) – Technical Guidance for Evaluating Selected Solar Technologies on Airports. The FAA has broad authority for airspace review and the evaluation of any solar project that could pose a potential hazard to air navigation. The clearest trigger for FAA review is a physical penetration of airspace.

With respect to solar glare on aviation safety, currently, no defined thresholds for project size, type, or distance from the airport are available that automatically trigger FAA airspace review (FAA, 2010). However, proximity to the airport and solar technology are two indicators of likely FAA interest in a solar project (FAA, 2010). According to this FAA technical guidance document, it is the responsibility of local governments, solar developers, and other stakeholders in the vicinity of an airport to check with the airport sponsor and the FAA to ensure there are no potential safety or navigational problems with a proposed solar facility, especially if it is a large facility (FAA, 2010). Sponsors should notify the FAA when such activities are proposed and FAA needs to participate in public meetings or permitting processes (FAA, 2010).

Occupational Safety and Health Administration (OSHA) mission is to ensure the safety and health of America's workers by setting and enforcing standards; providing training, outreach, and education; establishing partnerships; and encouraging continual improvement in workplace safety and health. The OSHA staff establishes and enforces protective standards and reaches out to employers and employees through technical assistance and consultation programs.

State Regulations

California Environmental Protection Agency (Cal/EPA) was created in 1991, which unified California's environmental authority in a single cabinet-level agency and brought the Air Resources Board, State Water Resources Control Board (SWRCB), Regional Water Quality Control Boards, Integrated Waste Management Board, DTSC, Office of Environmental Health Hazard Assessment, and Department of Pesticide Regulation under one agency. These agencies were placed within the Cal/EPA "umbrella" for the protection of human health and the environment and to ensure the coordinated deployment of State resources. California Vehicle Code (CVC) (DMV, 2016) includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials.

California Government Code Sections 65352, 65404, 65940, and 65944, amended by Senate Bill 1462, requires local planning agencies to notify the military whenever a proposed development project or general plan amendment is located within 1,000 feet of a military installation, located within special use airspace, or is located beneath a low-level flight path.

California Integrated Waste Management Act requires that each jurisdiction reuse, recycle, compost, or otherwise divert 50 percent of its annual waste away from landfills or show a good faith effort to reach this goal. The unincorporated areas of Riverside County currently meet their diversion goal, in addition to adopting the necessary plans and policies to comply with the act.

Hazardous Waste Control Act (HWCA) created the State hazardous waste management program, which is similar to but more stringent than the federal RCRA program. The act is implemented by regulations contained in Title 26 of the CCR, which describes the following required aspects for the proper management of hazardous waste:

- Identification and classification;
- Generation and transportation;
- Design and permitting of recycling, treatment, storage, and disposal facilities;
- Treatment standards;

- Operation of facilities and staff training; and
- Closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of such waste. Under the HWCA and Title 26, the generator of hazardous waste must complete a manifest that accompanies the waste from generator to transporter to the ultimate disposal location.

Local Regulations

County of Riverside Department of Environmental Health

The County of Riverside Department of Environmental Health (DEH) acts as the Certified Unified Program Agency (CUPA) for Riverside County and is responsible for reviewing Hazardous Materials Business Plans. A CUPA is a local agency that has been certified by Cal EPA to implement state environmental programs related to hazardous materials and waste. The DEH is responsible for protecting the health and safety of the public and the environment of Riverside County by assuring that hazardous materials are properly handled and stored. The DEH accomplishes this through inspection, emergency response, site remediation, and hazardous waste management services. The specific responsibilities of the DEH include the following:

- Inspecting hazardous material handlers and hazardous waste generators to ensure full compliance with laws and regulations.
- Implementing CUPA programs for the development of accident prevention and emergency plans, proper installation, monitoring, and closure of underground storage tanks and the handling, storage and transportation and disposal of hazardous wastes.
- Providing 24-hour response to emergency incidents involving hazardous materials or wastes in order to protect the public and the environment from accidental releases and illegal activities.
- Overseeing the investigation and remediation of environmental contamination due to releases from underground storage tanks, hazardous waste containers, chemical processes or the transportation of hazardous materials.
- Conducting investigations and taking enforcement action as necessary against anyone who disposes of hazardous waste illegally or otherwise manages hazardous materials or wastes in violation of federal, state, or local laws and regulations.

3.11.2 Existing Conditions

Hazardous Materials

Several factors associated with the project location affect the potential for an accidental release of a hazardous material that could cause public health impacts. These include:

1. Local meteorology;
2. Terrain characteristics;
3. Location of population centers and sensitive receptors relative to the Project;

4. Existing public health concerns; and
5. Existing environmental site contamination.

These conditions remain mostly unchanged compared to the environmental baseline presented within Section 3.12.2 of the 2011 PA/FEIS for the PSPP (BLM, 2011).

Meteorological Conditions

Meteorological conditions, including wind speed, wind direction, and air temperature, affect both the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the potential magnitude and extent of public exposure to such materials, as well as exposure to associated health risks. When wind speeds are low and the atmosphere stable, dispersion is reduced but could lead to increased localized public exposure. Recorded wind speeds and ambient air temperatures are described in Section 3.2, Air Quality.

Terrain Characteristics

The location of elevated terrain is often an important factor in assessing potential exposure. An emission plume resulting from an accidental release could impact high elevations before impacting lower elevations. The existing topographic conditions of the proposed solar field site show an average slope of approximately one foot in 75 feet (1.33 percent) toward the northeast.

Location of Exposed Populations and Sensitive Receptors

The general population includes many sensitive subgroups that could be at risk from exposure to emitted pollutants. Sensitive receptors are people who are particularly susceptible to illness, such as the elderly, very young children, people already weakened by illness (e.g., asthmatics), and persons engaged in strenuous exercise, or locations or institutions that may be occupied predominantly by one or more of these sensitive subgroups, such as residences, schools, hospitals, and hospices. The location of the population in the area surrounding a project site may have a major bearing on health risk.

While the amount of population in the area surrounding the site may have changed slightly, their location has not. The nearest sensitive receptors remain as single residences about 25 feet and 3,500 feet from the Project's northwest boundary. The nearest school (Eagle Mountain Elementary School) is about 10 miles west of the site.

Existing Public Health Concerns

Analyses of existing public health issues typically are prepared to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population located near proposed project sites to provide a basis on which to evaluate any additional health impacts from the Proposed Action. Because of the very low population in the immediate vicinity of the site (the entire population of the Desert Center area is 208 persons) and because no existing health concerns within a six-mile radius of the site are known, no existing public health issues are included as part of the environmental baseline.

Existing Environmental Site Contamination

The Phase I Environmental Site Assessment conducted for the project site in 2009 found no evidence or record of any use, spillage, or disposal of hazardous substances on the site, nor was there any other environmental concern that would require remedial action. Because the use of the site has not changed since 2009, this determination remains valid.

Waste Management

The Riverside County Waste Management Department operates six landfills, has a contract agreement for waste disposal with an additional private landfill, and administers several transfer station leases. The closest landfills to the Project are the Desert Center Landfill located approximately 10 miles northwest of the site and the Blythe Landfill located approximately 40 miles east of the site. Current capacity status of these landfills is unavailable. However, as shown in Table 3.11-1, the Desert Center Landfill was scheduled for closure in 2011 (but is still open in 2016) and the Blythe Landfill is scheduled for closure in 2034.

Table 3.11-1. Solid Waste Disposal Facilities

Waste Disposal Site	Title 23 Class	Maximum Permitted Capacity (cubic yards)	Current Operating Capacity (tons/day)	Remaining Capacity (cubic yards)	Estimated Closure Date
Badlands Sanitary Landfill	Class III	30,386,332	4,000	21,866,092	2016
Lamb Canyon Sanitary Landfill	Class III	34,292,000	3,000	20,908,171	2023
Oasis Sanitary Landfill	Class III	870,000	400	75,727	2019
Desert Center Landfill	Class III	117,032	60	23,246	2011
Blythe Sanitary Landfill	Class III	4,633,000	400	2,289,139	2034
El Sobrante Landfill	Class III	184,930,000	10,000	118,573,540	2030
Monofill Facility	Class II	1,729,800	750	1,314,800	2012
Chiquita Canyon Sanitary Landfill	Class II, III	63,900,000	6,000	35,800,000	2019
Kettleman Hills Landfill	Class I	10,700,000	8,000	1,100,000	2037
Clean Harbors Buttonwillow Landfill	Class I	14,300,000	10,500	8,884,000	2043

Class I landfill – A landfill that accepts for disposal 20 tons or more of municipal solid waste daily (based on an annual average) including permitted hazardous wastes.

Class II landfill – A landfill that (1) accepts less than 20 tons daily of municipal solid waste (based on an annual average); (2) is located on a site where there is no evidence of groundwater pollution caused or contributed by the landfill; (3) is not connected by road to a Class I municipal solid waste landfill, or, if connected by road, is located more than 50 miles from a Class I municipal solid waste landfill; and (4) serves a community that experiences (for at least 3 months each year) an interruption in access to surface transportation, preventing access to a Class I landfill, or a community with no practicable waste management alternative.

Class III landfill – A landfill that is not connected by road to a Class I landfill or a landfill that is located at least 50 miles from a Class I landfill. Class III landfills can accept no more than an average of 1 ton daily of ash from incinerated municipal solid waste or less than 5 tons daily of municipal solid waste.

Source: BLM, 2011.

Unexploded Ordnance (UXO)

Unexploded ordnance (UXO) are military munitions that have been primed, fused, armed or otherwise prepared for action, fired, dropped, launched, projected, or placed in such a manner to constitute a hazard; or remain unexploded either by malfunction, design, or any other case. UXO

presents an immediate risk of acute physical injury from fire or explosion resulting from accidental detonation. As discussed in Section 3.12.4 of the 2011 PA/FEIS, live-fire military training has occurred in camps and facilities in the project area. Due to historical military uses in and adjacent to the project area, UXO are a potential hazard at the project site.

Transmission Line Safety and Nuisances

The project site is in an undeveloped open desert land with no existing structures other than SCE's 161 kV Eagle Mountain–Blythe transmission line that traverses the southwestern portion of the site. Potential impacts under baseline conditions pertaining to aviation safety, fire hazards and electric and magnetic fields (EMF) associated with operation of this existing transmission line remain unchanged compared to that discussed in in Section 3.12.6 of the 2011 PA/FEIS. It should be noted that no residences or uses are located within the project site that could be subject to potential transmission line safety or nuisance effects.

Fire Hazards

Transmission line-related fire hazards could be caused by sparks from conductors of overhead lines, or from direct contact between the line and nearby trees and other combustible objects.

Emergency Services Vehicle Access

Riverside County has adopted the 2007 California Fire Code and 2007 California Building Standards Code in their entirety regulating and governing the safeguard of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials, and devices, and from conditions hazardous to life or property in the occupancy of buildings and premises in the Riverside County (Riverside County Ord. No. 787). Accordingly, emergency services access roads must be installed and made serviceable prior to and during the time of construction. The grade of the fire department access road must be within the limits established by the Fire Chief and may not exceed 15 percent. The Project would include the development of two all-weather access roads in accordance with County and fire code requirements to provide adequate access for emergency vehicles.

Traffic and Transportation Safety

The baseline ground transportation conditions remain unchanged compared to that discussed in Section 3.12.8 of the 2011 PA/FEIS. Regional access to the site is provided by Interstate 10 (I-10). Local access to the proposed project site would be from an extension of Corn Springs Road at the I-10 interchange.

The project site was compared to the military flight paths and airspace designations of the California Military Land Use Compatibility Analysis (CMLUCA) database to determine whether the project site is located within military special-use airspace or is located beneath a military designated low-level flight path (CMLUCA, 2016). Based on the CMLUCA, the project site is located within special-use military airspace or an area designated for low-level military flight paths (CMLUCA, 2016). However, the military has clarified in the Desert Renewable Energy Conservation Plan that while solar power tower facilities and wind turbines pose a potential obstruction

hazard to military aircraft navigation, solar PV projects have little to no impact on military activities (BLM, 2015, Section IV.24-2).

Aviation Safety

Hazards to area aircraft can arise from the potential for collision with transmission lines or tall structures in the navigable airspace. However, the project site is not located near a major commercial aviation center and no collision hazards would occur. No major airports exist near the project site.

The closest airfield to the project site is the privately operated Desert Center Airport, which is located at the end of an unnamed road, one mile (1.6 km) east of State Route 177 (Desert Center–Rice Road) and 5 miles (8.0 km) northeast of the town of Desert Center; this is approximately 5 miles northwest of the main project site but only 2 miles from the proposed gen-tie line. The Desert Center Airport was built in the early 1940s as Desert Center Army Airfield, officially opened in April 1943, and turned over to the Army Corps of Engineers in 1946, following the end of World War II. The airport operated as a civil airport (owned by Riverside County) at some point between 1966 and 2002; however, by 2002 it was all but abandoned. In 2003, the airfield was being used to fly unmanned aircraft: the hangar had been converted to a workshop and an inclined launching ramp was constructed. Thereafter, Riverside County sold the airfield to Chuckwalla Valley Associates, LLC, which now operates two runways to service the Chuckwalla Valley Raceway (FAA, 2010a; AirNav, 2010). The most recent information available indicates 150 aircraft operations per year at the airfield for the 12-month period ending December 31, 2006 (AirNav, 2016).

The next closest airport (Blythe Airport) is located about 30 miles east of the project site, outside the path of the proposed transmission lines.

Reflectivity

Reflectivity refers to light reflected off surfaces that could cause a brief episode of a loss of vision (also known as flash blindness) on pilots or air traffic controllers. Potential impacts of reflectivity include glint and glare. The term glint refers to a momentary flash of bright light. In comparison, glare is a continuous source of bright light. Flash blindness is defined in FAA Order 7400.2f as "a temporary visual interference effect that persists after the source of illumination has ceased." For facilities placed in the desert, far from most ground-based receptors, potential impacts would be limited to aircraft passing by (FAA, 2010).

Reflectivity from solar projects varies depending on the type of solar technology and solar panel materials and design. Solar PV systems, such as the that proposed by the Project, use solar panels to absorb solar radiation and directly convert the photons from sunlight into electricity. Solar PV technology does not involve thermal energy or the generation of steam to power turbines. Solar PV panels are constructed of dark, light-absorbing materials that maximize absorption and minimize reflection and are covered with an anti-reflective coating. The panels therefore are not highly reflective (FAA, 2010).

Geological Hazards: Faulting and Seismicity

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude and nature of fault rupture can vary for different faults, or even along different strands of the same fault. Ground rupture is considered most likely along active faults. Generally, the greater the earthquake magnitude and the closer the fault rupture to a site, the greater the intensity of ground shaking. The amplitude and frequency of ground shaking is related to the size of an earthquake, the distance from the causative fault, the type of fault (e.g., strike-slip), and the response of the geologic materials at the site.

The project site is not crossed by any known active faults or designated Alquist-Priolo Earthquake Fault Zone (BLM, 2011). A number of major, active faults lie within 63 miles of the site center. The fault type, potential magnitude, and distance from the site are summarized in Table 3.11-2. Each of the faults listed are considered active. The closest mapped active faults to the project site are the faults attributed to the Brawley Seismic Zone located approximately 37 miles to the southwest.

Table 3.11-2. Active Faults Relative to the Palen Solar Project Site

Fault Name	Distance from Site (miles)	Maximum Earthquake Magnitude (Mw)	Estimated Peak Site Acceleration (g)
Brawley Seismic Zone	37.0	6.4	0.071
San Andreas: Coachella M-1c-5	37.0	7.2	0.108
San Andreas SB-Coachella M-1b-2	37.0	7.7	0.140
San Andreas: Whole	37.0	8.0	0.165
Elmore Ranch	40.6	6.6	0.073
Pinto Mountain	50.8	7.2	0.085
Pisgah–Bullion Mountain–Mesquite Lake	54.9	7.3	0.084
Imperial	57.4	7.0	0.069
Superstition Hills	59.0	6.6	0.055
San Jacinto–Anza	60.0	7.2	0.074
Superstition Mountain	62.1	6.6	0.053

Source: CEC, 2010 Geology and Paleontology, Table 3.

Other Geologic Hazards

Other potential geologic hazards include subsidence and settlement, hydrocompaction, corrosive soils, expansive soils, and volcanic hazards. Regional ground subsidence, a caving in or sinking of land, is typically caused by petroleum or groundwater withdrawal; however, groundwater levels in the area have been steady in recent years and petroleum withdrawals do not occur locally.

Hydrocompaction occurs when rapidly deposited saturated soil, usually as a result of a flash flood, dries quickly, leaving an unconsolidated, low-density deposit with properties similar to weak cement. Corrosivity refers to potential soil-induced electrochemical or chemical action that could corrode or deteriorate concrete, reinforcing steel in concrete structures, and bare-metal structures exposed to these soils. The project geotechnical report prepared as part of the 2010 CEC Staff

Assessment and utilized in the 2011 PA/FEIS indicates that there is a low to moderate hydro-compaction potential based on the geotechnical data and the observation of soil profile in the test pits. In addition, the report found that corrosive soils are present at the project site and could be potentially corrosive to metal pipes. Potentially expansive soils, ground surface soils that have high clay content and can cause movements that result in damage and/or distress to structures and equipment with shallow foundations in response to changes in moisture content, were also observed at the project site. These soils are located at the ground surface in the northeastern portion of the site; however, the near surface soils are primarily granular with no to low swell potential.

The nearest volcanic hazard to the Project is the Lavic Lake volcanic hazard area (VHA), an approximately 14-square-mile area within the Mojave Desert located approximately 40 miles west of the project site. The Lavic Lake VHA has been designated by the USGS as an area subject to lava flows and tephra deposits associated with basalt or basaltic andesite vents. The Lavic Lake VHA is considered to be subject to future formation of cinder cones, volcanic ash falls, and phreatic explosions.

3.12 Recreation

The previous analyses of impacts on recreation for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.6, Land Use and Planning, Agriculture and Forest Resources, Wilderness and Recreation.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.13, Recreation.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.13, Recreation.

The affected environment and regulatory information presented in this section relies on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated statistics of visitors to public recreation areas in the project vicinity. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

Solar PV technology is less visible at distances than the mirrors used for solar trough or the mirrors and tower used for solar power tower technologies. As described in Section 3.19, *Visual Resources,* foreground and middleground visual distance is considered 5 miles or less; and the background distance zone is between 5 and 15 miles. Therefore, this Supplemental EIS/EIR uses the 5-mile distance for analysis of visibility from recreation areas. This is a shorter distance than was used for the PSPP PA/FEIS which describes public lands suitable for recreational opportunities generally occurring within 20 miles of the PSPP site and for the PSEGS Draft SEIS that included areas up to approximately 30 miles from the site.

3.12.1 Regulatory Framework

The following federal, state, and local laws and policies apply to the administration of recreation within the project study area.

Wilderness Act of 1964

The Wilderness Act, signed into law in 1964, created the National Wilderness Preservation System and recognized wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." The Act further defined wilderness as "an area of undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions…"

Designated wilderness is the highest level of conservation protection for federal lands. Only Congress may designate wilderness or change the status of wilderness areas. Wilderness areas are designated within existing federal public land. Congress has directed four federal land management agencies — U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service, and National Park Service — to manage wilderness areas to preserve and, where possible, to restore their wilderness character.

The Wilderness Act prohibits permanent roads and commercial enterprises, except commercial services that may provide for recreational or other purposes of the Wilderness Act. Wilderness areas generally do not allow motorized equipment, motor vehicles, mechanical transport, temporary roads, permanent structures or installations (with exceptions in Alaska). Wilderness areas are to be primarily affected by the forces of nature, though the Wilderness Act does acknowledge the need to provide for human health and safety, protect private property, control insect infestations, and fight fires within the area. Wilderness areas are managed under the direction of the Wilderness Act, subsequent legislation (such as the Alaska National Interest Lands Conservation Act), and agency policy.

Federal Land Policy and Management Act (FLPMA)

FLPMA recognizes the value of public lands and includes the multiple use/sustained yield framework for management to provide for outdoor recreation for future generations (BLM, 2001). Title VI of FLPMA, *Designated Management Areas, California Desert Conservation Area*, acknowledges the recreational resources contained within the California desert environment and directs the BLM to develop a multiple use and sustained yield management plan to conserve the desert's resources, particularly recreational use. The solar facility site is governed by these pieces of legislation, and its various alternatives would impact the recreational opportunities available in the vicinity.

California Desert Conservation Area (CDCA) Plan

The CDCA Plan defines Multiple-Use Classes for all BLM-managed lands, which includes the lands within the Proposed Action study area. The CDCA Plan establishes goals for management of recreation in the California Desert (BLM, 1980). As with the FLPMA, recreational opportunities in the study area are framed by the CDCA Plan. The goals are to provide for the use of the public lands and resources of the CDCA, including recreational uses, in a manner that enhances wherever possible — and that does not diminish — the environmental, cultural, and aesthetic values of the desert (BLM, 1980). The goals of the Recreation Element of the plan are to:

- Provide for a wide range of quality recreation opportunities and experiences emphasizing dispersed undeveloped use;
- Provide a minimum of recreation facilities. Those facilities should emphasize resource protection and visitor safety;
- Manage recreation use to minimize user conflicts, provide a safe recreation environment, and protect desert resources;
- Emphasize the use of public information and education techniques to increase public awareness, enjoyment, and sensitivity to desert resources;
- Adjust management approach to accommodate changing visitor use patterns and preferences; and
- Encourage the use and enjoyment of desert recreation opportunities by special populations, and provide facilities to meet the needs of those groups.
- Provide for off-road vehicle recreation use where appropriate in conformance with FLPMA, Section 601, and Executive Orders 11644 and 11989.

Areas of Critical Environmental Concern (ACECs) are also identified as special management areas in the CDCA Plan. These include areas where special management attention is required to protect important historic, cultural, scenic, biological, or other natural resources.

The CDCA Plan also contains a motorized-vehicle access element, which provides a system and a set of rules that governs access to the CDCA by motor vehicles. The rules include providing for constrained motor-vehicle access, while protecting desert resources (BLM, 1980). When the CDCA Plan was first adopted, the BLM designated a network of motorized vehicle routes on public lands within the northern and eastern Mojave Desert. The BLM designated routes for north-central and southern portions of the CDCA. The BLM manages OHV use, so the conditions of special status species and other natural and cultural resources are maintained (BLM, 2011).

Northern and Eastern Colorado Desert Coordinated Management Plan

The NECO Plan, an amendment to the CDCA Plan, provides for management of recreation within the California Desert area of El Centro, Blythe, Needles, and cities in the Coachella Valley, including the Proposed Action study area (BLM, 2002). The NECO Plan specifies the types of recreational activities allowed in Multiple-Use Classes on BLM-administered land. Under this plan, all routes outside closed and OHV open areas are designated as open, closed, or limited. The NECO plan includes an off-highway vehicles (OHV) route inventory and designated routes of travel (approximately 95 percent of existing routes remained available for vehicle access under the plan). Open routes through the solar facility area include DC 948, 949, 950, 952, and 511. Special recreation permits are required for certain areas such as off-highway vehicle areas, shooting ranges, and specialized trail systems. These include authorizations for commercial use, competitive events, group activities, and recreation events.

Desert Renewable Energy Conservation Plan

The BLM published the Land Use Plan Amendment (LUPA) and Final EIS for the Desert Renewable Energy Conservation Plan (DRECP) in November 2015. The DRECP amended the CDCA Plan with the signing of the Record of Decision in September of 2016. It designates Special Recreation Management Areas and Extensive Recreation Management Areas within the California Desert, including the study area (BLM, 2015). The DRECP includes additional conservation management actions for recreation that dictate the types of activities allowed near certain recreational features. The Palen Solar Project is not subject to the DRECP Record of Decision (BLM, 2016).

Off-Road Vehicles (Title 43 CFR 8340, et seq.)

This regulation establishes criteria for designating public lands as open, limited, or closed to the use of OHVs and for establishing controls governing the use and operation of OHVs in such areas, while protecting resources, promoting safety, and minimizing user conflicts. Recreational use under Title VI "includes the use, where appropriate, of off-road recreational vehicles" (BLM, 2001).

Riverside County Integrated Plan, General Plan, and Desert Center Area Plan

The Riverside County General Plan includes policy area locations, such as for Desert Center, that have a separate Land Use Plan for future development and growth. The entire Proposed Action study area falls within the DCAP, which is part of the General Plan. Local land use does not apply to the BLM, but the FLPMA requires the BLM to coordinate with local governments in land use planning in Title II, Section 202, (b)(9).

Additional land use policies are described in more detail in Section 3.11, Lands and Realty.

3.12.2 Existing Conditions

Recreational uses on public lands at the site are guided by the CDCA Plan (1980) and the NECO Plan (2002). The site is designated in the CDCA and NECO Plans as Multiple Use Class M (Moderate Use; MUC-M). The Class M category is suitable for a range of recreation activities, which generally involve moderate to high user densities, including backpacking, primitive unimproved site camping, hiking, horseback riding, rockhounding, nature study and observation, photography and painting, rock climbing, spelunking, hunting, land sailing on dry lakes, noncompetitive vehicle touring, and events only on "designated open" routes of travel (BLM, 1980; BLM, 2002). Recreational vehicle use, including off-highway vehicle (OHV) use, is discussed in Section 3.17 of the Supplemental EIS/EIR, Transportation and Public Access – Off-Highway Vehicle Resources.

The BLM reviewed the land use designation of the site through the DRECP Land Use Plan Amendment (LUPA) in a November 2015 Final EIS. The DRECP LUPA has eliminated the multiple-use classes (MUCs) that were defined in the CDCA. The LUPA identifies the Palen site location as being within a Development Focus Area (DFA), which is an area where the activities associated with solar, wind, and geothermal development, operation, and decommissioning would be allowed. Since the DRECP LUPA has been approved, the MUC-M designation no longer applies at this location, although the types of recreation that occur in the region have not necessarily changed. As noted above, the Project is not subject to the DRECP LUPA so the Supplemental EIS/EIR analyzes the impacts as if the MUC Class M were still applicable.

Primary activities observed on the Proposed Action site by BLM staff include OHV touring and sightseeing, photography, rockhounding, hiking, and hunting. Camping or backpacking is not common. There are no recreation facilities or specific recreational attractions on the site. The BLM has no visitor counts for the site, but visitor use is understood to be low due to the limited availability and accessibility of recreation opportunities in the immediate area. In addition, there are other more attractive recreational opportunities nearby (e.g., Corn Springs south of the I-10 or the Joshua Tree National Park). Most use is by local residents from Desert Center and Blythe, or visitors stopping for short periods while traveling along I-10 (BLM, 2011; CEC, 2010).

Regional Recreation Areas and Opportunities

The unincorporated community of Desert Center is approximately 10 miles west of the site in the Chuckwalla Valley. It has no community parks. There are no regional or State parks or designated open space areas in the Chuckwalla Valley. Lake Tamarisk, located 2 miles north of Desert Center,

is a 55 member-owned community for active seniors with 150 mobile homes spaces, mobile home rentals, dry campground, heated pool and club house (BLM, 2011).

The BLM administers wilderness areas; campgrounds, including long-term visitor areas; trails; interpretive sites; and an extensive network of backcountry approved travel and OHV routes in the vicinity of the site. ACECs and wilderness also provide dispersed recreation opportunities in the region. In general, recreation use on BLM lands in the California desert is limited to the cooler months of September through May, with little use in the summer. Outside of fee collection sites, the BLM has no accurate estimates of visitor use; however, staff observations and Law Enforcement Ranger patrols indicate the area described in this section received approximately 2,000 to 3,000 visitors per year. Recreation areas within 20 miles of the project site are identified in Table 3.12-1, beginning with the area closest to the site, and are discussed below.

Table 3.12-1. Recreation Areas and Special Designations with Recreational Opportunities

Recreation Area	Direction from Project Site	Distance from the Project Site (miles)	Approximate Size (acres)	Status
Chuckwalla Special Recreation Management Area	south	0.1	228,480	Designated in the DRECP
Palen Ford Playa Dunes ACEC	north and east	0.1	41,370	Designated in the DRECP
Chuckwalla Desert Wildlife Management Area ACEC	southwest	0.25, crossed by linear facilities	493,600	Designated; Expanded under the DRECP to 514,400 acres
Palen Dry Lake ACEC	northeast	0.5	3,630	Designated
Chuckwalla Mountains Wilderness	south	1.5	99,550	Designated
Palen-McCoy Wilderness	northeast	1.25	236,490	Designated
Corn Springs ACEC	southwest	4.5	2,470	Designated
Alligator Rock ACEC	west	5	7,750	Designated
Desert Lily Preserve ACEC	northwest	5	2,060	Designated
Joshua Tree National Park	northwest	7	1,017,750	Designated
Joshua Tree Wilderness	northwest	7	549,500	Designated
Little Chuckwalla Mountains Wilderness	southeast	14	28,030	Designated
Chuckwalla Valley Dune Thicket ACEC	southeast	15.5	2,270	Designated
Corn Springs Campground	southwest	6.5	9 camping units	Designated
Bradshaw Trail Back Country Byway	south	17	65 miles	Designated

Source: BLM, 2011 and BLM, 2015

Joshua Tree National Park

The National Park Service administers Joshua Tree National Park (Park). The southeast end of the Park is located about 7 miles west of the project site. The Park comprises approximately 1,017,748 acres, mostly federally administered, and is used for hiking, mountain biking and rock climbing, and includes nine campgrounds. Other recreational opportunities within the Park include wildflower viewing and birdwatching (BLM, 2011). The eastern part of the park, closest to the Project, contain dark skies with little light pollution that draw stargazers and amateur astronomers to this part of the park and the Park has applied to be designated as a "dark Sky Park" by the

International Dark Sky Association. The Park is open year round, with peak visitation occurring in April. Over 2 million people visited the Park in 2015 (NPS, 2016).

Wilderness Areas

The Wilderness Act limits recreation on wilderness lands to those that are primitive and unconfined, depend on a wilderness setting, and do not degrade the wilderness character of the area. Motorized or mechanized vehicles or equipment for recreational purposes are not permitted in wilderness (916 USC 1133(c)). The BLM regulates such recreation on lands within its jurisdiction in accordance with the policies, procedures and technologies set forth in the Code of Federal Regulations (43 CFR 6300), BLM Manual 6340 (*Management of Designated Wilderness Areas*; BLM, 2012), and BLM's Principles for Wilderness Management in the California Desert (BLM, 1995).

Designated Wilderness Areas are shown in Figure 3.15-1, Special Designations Near Project Site (in Appendix A), and described in Section 3.15, Special Designations. As indicated in Table 3.12-1, four wilderness areas are located within 20 miles of the project site: the Chuckwalla Mountains Wilderness, Palen-McCoy Wilderness, Joshua Tree Wilderness, and Little Chuckwalla Mountains Wilderness.

The four wilderness areas in the vicinity of the Proposed Action site have no developed trails, parking/trailheads, or other visitor use facilities. These areas are generally steep, rugged mountains, with no permanent natural water sources, thus limiting extensive hiking or backpacking opportunities. Visitor use within the wilderness areas is very light although the BLM has no visitor use counts. Five nearby mountain peaks are occasionally used by the Desert Peaks Section of the Sierra Club's Angeles Chapter (BLM, 2011). None of the peaks directly overlook the Proposed Action site, although the site may be visible from certain peaks, depending on elevation and topography.

Observations by staff and Law Enforcement Rangers indicate only 100 to 200 hikers per year within all the wilderness areas near the Proposed Action site. More popular is vehicle camping along roads that are adjacent to the wilderness areas. RV camping near wilderness areas, with associated hiking, OHV use, photography, sightseeing, etc., accounts for up to 2,000 visitors per year (BLM, 2011).

Areas of Critical Environmental Concern

ACECs are shown in Figure 3.15-1, Special Designations Near Project Site (Appendix A), and described in Section 3.15, Special Designations. As indicated in Table 3.12-1, six ACECs are located near the Palen site: the Chuckwalla Desert Wildlife Management Area ACEC, Palen Dry Lake ACEC, Corn Springs ACEC, Alligator Rock ACEC, Desert Lily Preserve ACEC, and Chuckwalla Valley Dune Thicket ACEC. Recreation activities allowed in ACECs are determined by the resources and values for which the ACECs were established, and by the associated ACEC Management Plan. Most ACECs allow low-intensity recreation use that is compatible with protection of the relevant values. One new ACEC was added in the DRECP, the Palen-Ford Playa Dunes ACEC (BLM, 2015).

The Alligator Rock ACEC and the Corn Springs ACEC primarily protect cultural resources. The Chuckwalla Desert Wildlife Management Area (DWMA) and Desert Lily ACECs protect sensitive wildlife and plant species, while Chuckwalla Valley Dune Thicket and Palen Dry Lake ACECs protect both natural and cultural resources. The Palen-Ford Playa Dunes ACEC maintains the integrity of essential fringe-toed lizard habitat and essential ecological processes. Only the Corn Springs and the newly designated Palen-Ford Playa Dunes have recreation use facilities; however, they are signed to inform visitors of the special values of the areas and associated protection measures. Between October 1, 2015 and September 30, 2016, the Corn Springs Campground received 5,546 visits, the Desert Lily Preserve received 1,320 visits, and eastern Riverside County as a whole received over 1.29 million visits (BLM, 2017). (The Palen-Ford ACEC overlaps with the proposed Chuckwalla Special Recreation Management Area (SRMA) (BLM, 2015).

Long Term Visitor Areas

The BLM manages seven long-term visitor areas, which accommodate visitors who wish to camp for as long as seven consecutive months. Five are in California and two are in Arizona. Mule Mountains LTVA is 2,805 acres an estimated 30 miles east of the project site and includes the Wiley's Well and Coon Hollow campgrounds. Mule Mountains LTVA received 20,537 visits in 2015-2016 (BLM, 2017). Midland long-term visitor area is an estimated 45 miles east of the project site. Midland LTVA is 135 acres. Midland LTVA received 17,964 visits in 2015-2016 (BLM, 2017).

Special Recreation Management Areas

A SRMA designation intensifies management of areas where outdoor recreation is a high priority. SRMAs are units of public land identified for directing available recreation funding and personnel to specific, structured recreation opportunities. They are managed to protect and enhance a targeted set of activities, experiences, benefits, and desired recreation.

The DRECP LUPA has designated one SRMA less than 1,000 feet south of the project site on the south side of the I-10, the Chuckwalla SRMA. This area is to provide opportunities for area residents, visitors, and commercial recreation providers to engage in motorized and non-motorized recreation activities that are compatible with recovery efforts for the desert tortoise and other resource values. The primary activities for the Chuckwalla SRMA are motorized recreation touring and other recreational activities that rely on motorized vehicles to access public lands.

The Bradshaw Trail

The Bradshaw Trail is a 70-mile Back Country Byway in southeastern Riverside County, with a small segment in Imperial County. This east-west trail is located about 17 miles south of the project site, and extends from about 12 miles east of the community of North Shore near the Salton Sea State Recreation Area to about 14 miles southwest of Blythe near the Colorado River.

The Bradshaw Trail was the first road through Riverside County, blazed by William Bradshaw in 1862 as an overland stage route beginning in San Bernardino, California, and ending at Ehrenberg, Arizona. The trail was used extensively between 1862 and 1877 to transport miners and passengers. The trail is a dirt road that traverses mostly public land between the Chuckwalla Mountains and the Chocolate Mountain Aerial Gunnery Range. Four-wheel-drive vehicles are recommended due

to stretches of soft sand. Recreational opportunities along the Bradshaw Trail include four-wheel driving, wildlife viewing, plant viewing, birdwatching, and scenic drives. All commercial activities require a land use or special recreation permit from the BLM. Fourteen-day camping limits apply on public lands.

3.13 Social and Economic Impacts

This section describes the social and economic background and existing conditions in the Proposed Action area. The analyses of social and economic impacts on recreation for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 California Energy Commission (CEC) Revised Staff Assessment (RSA) for the PSPP, Section C.8, Socioeconomics and Environmental Justice.
- For CEQA, the 2013 CEC Final Staff Assessment (FSA) for the PSEGS (solar power tower analysis), Section 4.8, Socioeconomics.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.14, Social and Economic Setting.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.14, Social and Economic Setting.

Key elements of these analyses consist of: (1) description of applicable plans, policies, and regulations that represent the community's social aspirations, characteristics, and desired lifestyle, values, and goals; and (2) summary of existing social and economic conditions in the project area, as well as the public service providers that serve the project area.

The affected environment and regulatory information presented in this section relies on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated information on the population and housing growth projections of communities near the project area. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

3.13.1 Regulatory Framework

Riverside County

Since the publication of the 2011 PSPP PA/FEIS, the County of Riverside has amended its general plan elements, which includes amendments as recently as 2015 to the Land Use Element, Housing Element, and the Desert Center Area Plan. The following summary identifies goals and policies from the amended general plan elements and area plan that are relevant to socioeconomic resources (County of Riverside, 2015a, 2015b, 2015c).

> *LU 1.1: Allow for the continued occupancy, operation, and maintenance of legal uses and structures that exist at the time of the adoption of the General Plan and become non-conforming due to use, density, and/or development requirements.*
>
> *LU 1.3: The County will notify city planning departments about new proposed discretionary projects that are located adjacent to cities or within their spheres of influence, with sufficient advance notice to allow for City-County coordination and city comments at public hearings. The County is willing to consider entering into intergovernmental agreements with cities and other governmental entities to address matters of mutual concern relating to land use, infrastructure, the environment, and other subjects relating to development activity in both the County and the cities or other governmental entities.*

LU 1.5: The County of Riverside shall participate in regional efforts to address issues of mobility, transportation, traffic congestion, economic development, air and water quality, watershed and habitat management with cities, local and regional agencies, stakeholders, Indian nations, and surrounding jurisdictions.

LU 7.3: Consider the positive characteristics and unique features of the project site and surrounding community during the design and development process.

LU 7.4: Retain and enhance the integrity of existing residential, employment, agricultural, and open space areas by protecting them from encroachment of land uses that would result in impacts from noise, noxious fumes, glare, shadowing, and traffic.

LU 8.1: Accommodate the development of a balance of land uses that maintain and enhance Riverside County's fiscal viability, economic diversity, and environmental integrity.

LU 8.2: Promote and market the development of a variety of stable employment and business uses that provide a diversity of employment opportunities.

LU 8.5: Stimulate cooperative arrangements with adjacent cities, counties, regions, and states where programs and projects of mutual benefit can be undertaken.

LU 8.6: Create practical incentives for business development, and avoid disincentives.

LU 8.12: Improve the relationship and ratio between jobs and housing so that residents have an opportunity to live and work within the county.

LU 17.2: Permit and encourage, in an environmentally and fiscally responsible manner, the development of renewable energy resources and related infrastructure, including but not limited to, the development of solar power plants in the County of Riverside.

H 1.1: Encourage housing developers to produce affordable units by providing assistance and incentives for projects that include new affordable units available to lower/moderate income households or special needs housing.

H 1.2: Ensure the availability of suitable sites for the development of affordable housing to meet the needs of all household income levels, including farm workers and other special needs populations.

H 3.5: Expand the availability of affordable and/or special needs housing through acquisition or conversion.

H 4.1: Evaluate Riverside County's planning policies, codes, development review procedures and fees as part of the Housing Element update cycle to ensure that they do not represent unjustified constraints to the development of housing. (Note: Other elements of the General Plan address various components of residential neighborhoods that could add to the cost of housing (e.g. Safety Element or Circulation Element, but are considered essential ingredients of balanced communities.)

DCAP 2.2: Provide for a balance of housing, services and employment uses such that Desert Center and Lake Tamarisk residents and/or employees can access necessary services or facilities such as health care, housing, employment, food, recreational, and entertainment facilities.

DCAP 2.3: Assure that the design of new land uses subject to discretionary review visually enhances, and does not degrade, the character of the Desert Center region.

City of Blythe

The main local plans, policies, and goals for the City of Blythe's future community development are described within the City's General Plan and the City's Redevelopment 2005-2009 Implementation Plan. The following General Plan goals are relevant to evaluating how socioeconomic resources may be affected by the Proposed Action (City of Blythe, 2007).

Land Use Policy 1: Preserve the scale and character of established neighborhoods.

Land Use Policy 2: Encourage new residential growth in the form of neighborhoods.

Land Use Policy 6: Provide for appropriate relationships between higher density and lower density residential areas, and require buffers of varying size between residential uses and non-residential uses without restricting foot and bicycle access.

Land Use Policy 19: Ensure that industrial development is compatible with and does not adversely affect the natural environment.

Housing Element Goal 1: Provide housing to meet the present and future needs of residents in the City of Blythe and to aim at providing a fair share of the area housing needs, within identified governmental, market, economic and natural constraints.

Housing Element Goal: Facilitate the development of programs that will provide quality housing for those who otherwise would have difficulty affording such housing at market rates. Specifically, such programs will be directed at low and particularly very low income groups.

Redevelopment Agency Goal 1: Preserve and enhance the economic prosperity of the community and aid business development and retention.

City of Coachella

Since the publication of the 2011 PSPP PA/FEIS, the City of Coachella has updated its general plan to guide growth and development through the year 2035. Relevant topics addressed by the general plan include land use and community character, as well as community health and wellness. The following summary identifies policies from the updated general plan that are relevant to socioeconomic resources (City of Coachella, 2015).

Land Use & Community Character Policies

Policy 2.8: Growth and development evaluation. Every five years, review and adjust, as needed, the General Plan's population and employment capacities to meet changes in economic and demographic conditions.

Policy 5.5: Housing affordability. Ensure affordable housing is distributed throughout the City to avoid concentrations of poverty and be accessible to jobs.

Policy 7.2: Industrial expansion. Actively seek to expand the amount of industrial uses in Coachella as a source of jobs and economic development. Industrial uses should be focused in subareas 5, 7 and 8.

Policy 11.1: Long-term economic development. Support the development and implementation of long-term economic development strategies that seek to establish and keep new businesses and a strong-middle class in Coachella over the decades to come.

Policy 11.4: Diversified economy. Encourage economic development strategies that allow the City to move beyond reliance on its two main industries — agriculture and resort services — and transform itself to a mature mix of economic activity and job opportunities.

Policy 11.5: Jobs-housing balance. Strive to improve the jobs-housing balance in the City by actively pursuing employment uses to the City.

Policy 11.6: Jobs-housing match. To the extent feasible, attract new employment uses to Coachella that match the skill and educational levels of existing and future residents.

Policy 11.7: Job training. Expand job training opportunities for Coachella residents.

Community Health & Wellness Policies

Policy 2.2: Affordable housing location. Support the development of affordable housing in close proximity to services, transit and employment opportunities to reduce unnecessary transportation costs associated with sprawl development and ensure affordable housing is not located near hazardous or undesirable land uses.

Policy 2.3: Housing diversity. Provide a greater diversity and range of housing by location, tenure, type of unit and price throughout the City.

Policy 2.5: Integrated affordable housing. Strive to create mixed-income neighborhoods by integrating affordable housing with market rate housing, avoiding concentrations of below-market-rate or subsidized housing in any one area of the City or within the City's Sphere of Influence.

Policy 2.12: Rental assistance programs. Allow the use of incentives to encourage more residential property owners to participate in rental assistance programs, such as Section 8.

Policy 2.14: Workforce housing. Prioritize the creation and retention of workforce housing in the City, including farm workers, civil service workers and young professionals.

Policy 7.4: Workforce housing. Encourage qualified employees to live in Coachella through home buyer assistance and other programs.

City of Indio

Since the publication of the 2011 PSPP PA/FEIS, the City of Indio has amended its Housing Element to address adequate housing opportunities for present and future Indio residents through 2021. The following summary identifies policies from the adopted general plan elements that are relevant to socioeconomic resources (City of Indio, 2004 and 2015).

Goal LU-1: To plan for a city with a diversity of residential opportunities and lifestyles to fit the current and future needs of Indio.

Goal LU-2: In portions of the Planning Area that have large amounts of undeveloped land under a few ownerships, provide the tools and flexibility to guide the development of these area to achieve a range of housing opportunities with higher than average amenity packages.

Areas requiring this added level of planning are designated with a Residential Planned Development (RPD) overlay designation unique to that area.

Goal LU-3: To plan for a range of commercial sites within the Planning Area to serve the needs of those living, working, and visiting Indio. These commercial areas will provide a range of commercial opportunities in line with the needs of the above groups, and will continue to develop Indio as the retail center of Eastern Coachella Valley.

Goal LU-4: Provide additional guidelines for the development of key areas within Indio in order to encourage master planned commercial developments with a strong sense of identity and high levels of design. These areas will be designated with a Commercial Planned Development (CPD) designation unique to that area.

Goal LU-5: Provide additional guidelines for the development of medical centers needed to support the population in Indio and the surrounding region.

Goal LU-6: To enhance the employment base of Indio through the provision of adequate lands dedicated to industrial use and to take advantage of the City's Enterprise Zone.

Goal LU-7: Provide a development framework for the reuse of the areas within and adjacent to the railroad corridor that provides opportunities for the development of manufacturing, transportation, and commercial uses while maintaining the historic significance of the railroad center.

Goal LU-8: To plan for areas for the provision of public and quasi-public services, such as schools, libraries, police and fire facilities, government centers, and other related facilities that area of a size and location to efficiently serve the current and future population of Indio.

Goal LU-9: To provide a range of active and passive recreational areas as well as provide areas for the preservation of the natural environment.

Goal LU-10: Provide areas in the community that encourage the combination of commercial, medium/high density residential, and active and passive open space uses within an area to create a vibrant village atmosphere dominated by pedestrian oriented land uses.

Goal LU-11: Recognize the need for flexibility in design of large development projects, and allow the adoption of City or developer provided specific plans that will become the guiding document used in the approval of future projects within their boundaries.

Goal ED-1: Provide the City with the tools needed to promote a balanced economic growth with sufficient fiscal resources to provide for the necessary infrastructure, and public and community services.

Housing Goal 2: To remove constraints that hinder the construction of affordable housing.

Housing Goal 3: To provide adequate, suitable sites for residential use, development and maintenance of a range of housing that varies sufficiently in terms of cost, design, site, location and tenure to meet the housing needs of all economic segments of the community at a level which can be supported by the infrastructure.

Housing Goal 6: To coordinate local housing efforts with appropriate federal, state, regional, and local governments and/or agencies and to cooperate in the implementation of

intergovernmental housing programs to ensure maximum effectiveness in solving local and regional housing problems.

3.13.2 Existing Social Conditions

As stated in the PSPP PA/FEIS, the expected regional extent for construction workers' daily work commuting is a primary determinant for the affected social and economic environment associated with a project. Because worker spending and housing is an important potential economic benefit of the Project, the location of residences of the project workers likely would be one of the most relevant factors in the magnitude and extent of the Proposed Action's potential socioeconomic impacts to the local and regional communities and economy. The direct benefits of employment and higher personal incomes will primarily benefit the communities where workers and their families reside because these communities would likely be where employees spend most of their earnings. Workers' spending for goods and services also would have an indirect effect on the communities and economies where that spending occurs and result in added secondary employment. If the number of suitable workers to staff the Proposed Action locally or in the region is insufficient, then the Project could attract individuals to relocate to the area (either temporarily or permanently). Additional new residents consequently could result in increased demand for housing and local services (BLM, 2011).

As required by the BLM Land Use Planning Handbook, Appendix D requirements (BLM, 2005), the analysis of the Proposed Action needs to consider existing socioeconomic conditions and impacts on several geographic scales. An analysis at a local level presents a challenge because the Proposed Action is in a sparsely populated area. Based on BLM guidelines, a reasonable study area for localized socioeconomic impacts would, at a minimum, include the four nearest communities: City of Blythe, California (approximately 40 miles east of the site); community of Desert Center, California; City of Ehrenburg, Arizona (approximately 45 miles east of the site); and Town of Quartzsite, Arizona (approximately 57 miles east of the site). These cities represent all major communities located within an hour commute of the site and therefore together represent the local study area for the Proposed Action (BLM, 2011).

Regional Study Area

There is little research and analysis providing guidance for determining the socioeconomic impact area boundaries for power facilities. The PSPP RSA cites an Electric Power Research Institute study that found workers may choose to commute as much as two hours each direction from their communities rather than relocate (EPRI, 1982). As the PSPP was proposed in rural eastern Riverside County, at the same site as the Project, the PSPP PA/FEIS concluded that the regional study area should be defined by a two-hour daily commute radius (BLM, 2011). This two-hour commute radius was found to satisfy the requirements of the BLM Land Use Planning Handbook, Appendix D, under which a proposed action must consider existing socioeconomic conditions and impacts on several geographic scales (regional versus local level) (BLM, 2005). Given that the Project would be located at the same site as the PSPP, the regional study area for the Proposed Action includes the same counties as the PSPP (i.e., Riverside County, California; San Bernardino County, California; and La Paz County, Arizona).

To characterize the population and housing profile of the regional study area, current and forecasted population trends as well as current housing trends for the study area are summarized in Table 3.13-1. This data was incorporated from the PSEGS 2013 FSA, which provides an updated overview of the study area relative to the 2011 PSPP PA/FEIS. As shown in Table 3.13-1, the regional study area contains a high number of housing units, with San Bernardino and Riverside Counties contributing the largest number of vacant units in the study area. Among all counties within the study area, La Paz County has the highest vacancy rate (43 percent).

Table 3.13-1. Population and Housing Profile of the Regional Study Area

Population

Area	2000	2010	2020	2030	2040	2050	2060
Riverside County, California	1,545,387	2,189,641	2,593,211[1] 2,592,000[2]	3,046,064[1] 3,324,000[2]	3,462,256	3,828,798	4,216,816
San Bernardino County, California	1,709,434	2,035,210	2,273,017	2,626,945	2,988,648	3,248,440	3,433,047
La Paz County, Arizona	19,579	22,632	21,988	23,615	25,351	27,710	NA

Housing

Area	2010 Total Housing Units	2010 Occupied Housing Units	2010 Vacant Housing Units	2010 Vacancy Rate
Riverside County, California	800,707	686,260	114,447	14%
San Bernardino County, California	699,637	611,618	88,019	13%
La Paz County, Arizona	16,049	9,198	6,851	43%

Notes: NA = Data not available; (1) CA DOF 2013; (2) SCAG 2012
Source: CEC, 2013

Local Study Area

The local study area is defined as the communities within a one-hour commute of the Project. An analysis at a local level presents a challenge because the Project is in a sparsely populated area, with the largest urban center being the city of Riverside, located approximately 100 miles west of the site. A reasonable study area for localized socioeconomic impacts would include the two nearest communities: City of Blythe, California (approximately 25 miles east of the site); and the City of Ehrenburg, Arizona (approximately 30 miles east of the site). Population and housing data from the PSEGS 2013 FSA was incorporated into Table 3.13-2, which provides an updated overview of the study area relative to the 2011 PSPP PA/FEIS. As Desert Center is the closest community to the project site, population and housing data for Desert Center have been included in the table even though this community is sparsely populated.

Table 3.13-2. Population and Housing Profile of the Local Study Area

Population

Area	2000	2010	2020	2030
Blythe, California	12,155	20,817	22,700	24,300
Desert Center, California	NA	204	NA	NA

Table 3.13-2. Population and Housing Profile of the Local Study Area

Ehrenburg, Arizona	1,357	1,470	NA	NA
Quartzsite, Arizona	3,354	3,677	NA	NA

Housing

Area	Total Housing Units	Occupied Housing Units	Vacant Housing Units	Vacancy Rate	For Sale	For Rent
Blythe, California	5,473	4,513	960	18%	26%	10%
Desert Center, California	140	85	55	39%	24%	11%
Ehrenburg, Arizona	948	645	303	32%	16%	7%
Quartzsite, Arizona	3,378	2,027	1,351	40%	6%	8%

Notes: NA = Data not available
Source: CEC, 2013Temporary Housing Resources

Rental Homes

Table 3.13-2 shows that vacancy rates are high in the study area. Based on vacancy rates for the City of Blythe, approximately 960 housing units are unoccupied and may be available for rental (or purchase) by future workers (see Table 3.13-2). Similarly, the data also suggests that up to 1,650 local housing units may be available within the city of Ehrenburg and the town of Quartzsite, Arizona (CEC, 2013). However, the condition, suitability, and availability of the existing housing resources for use as temporary housing for project-related construction workers are unknown. Further, as shown by the high vacancy rates elsewhere in the regional study area, some "vacant" homes may be second homes and, therefore, less available for use as temporary housing.

Hotel and Motel Accommodations

In addition to the existing residential units, project construction workers and operational workers could use local lodging facilities as temporary housing. Hotel/motel lodging suitable for potential temporary housing use typically is concentrated in urban areas or near major transportation nodes.

Table 3.13-3 identifies over 12,900 motel/hotel rooms within a two-hour commute of the project site in selected cities in Riverside County and the nearby communities of Ehrenberg and Quartzsite in Arizona (CEC, 2013).

Table 3.13-3. Hotel/Motel Supply Within the Regional and Local Study Areas

Geographic Area	Hotels/Motels	Total Number of Rooms
Bermuda Dunes, California	1	Data not available
Blythe, California	21	1,032
Cathedral City, California	3	234
Coachella, California	0	0
Desert Center, California	0	0
Indian Wells, California	5	1,508
Indio, California	13	808
Mecca, California	0	0

Table 3.13-3. Hotel/Motel Supply Within the Regional and Local Study Areas

Geographic Area	Hotels/Motels	Total Number of Rooms
Mesa Verde, California	0	0
Palm Desert, California	14	2,300
Palm Springs, California	55	5,232
Palo Verde, California	0	0
Rancho Mirage, California	6	1,598
Ripley, California	0	0
Thermal, California	0	0
Thousand Palms, California	1	116
Ehrenberg, Arizona	1	84
Quartzsite Arizona	1	50
Totals	121	12,962

Sources: CEC, 2013

Housing Vacancy

As shown in Table 3.13-2, the closest community to the project site, Desert Center, had a 39 percent vacancy rate with 55 vacant housing units available. The 2013 PSEGS FSA found that the city of Blythe had a larger vacant housing supply with 960 units, for an 18 percent vacancy rate. According to the PSEGS FSA, a five percent vacancy is largely accepted as a minimum benchmark for a sufficient amount of housing available for occupancy. Table 3.13-4 presents a more detailed look at housing supply within a two-hour commute of the site, and Table 3.13-5 presents a more detailed look at the type of vacancy available. The 2013 PSEGS FSA found that a total of 43,559 vacancies, representing a 28 percent vacancy rate, were available in the cities and communities within the regional study area (CEC, 2013).

As presented in Table 3.13-5, the vacant housing supply shows a total of 6,585 of the vacancies were available for rent, 4,007 vacancies were available for sale, and 28,536 vacancies were for seasonal, recreational or occasional use (CEC, 2013). The housing counts in the study area indicate a greater supply of available housing units than demand.

Table 3.13-4. Housing Unit Supply Within the Regional and Local Study Areas

Geographic Area	Total	Occupied	Vacant	Percent Vacant
Bermuda Dunes, CDP, California	3,639	2,942	697	19
Blythe, California	5,473	4,513	960	18
Cathedral City, California	20,995	17,047	3,948	19
Coachella, California	9,903	8,998	905	9
Desert Center, CDP, California	140	85	55	39
Indian Wells, California	5,137	2,745	2,392	46
Indio, California	28,971	23,378	5,593	19
Mecca, CDP, California	2,020	1,854	166	8
Mesa Verde, CDP, California	360	312	48	13
Palm Desert, California	37,073	23,117	13,956	38

Table 3.13-4. Housing Unit Supply Within the Regional and Local Study Areas

Geographic Area	Total	Occupied	Vacant	Percent Vacant
Palm Springs, California	34,794	2,274	12,048	35
Palo Verde, CDP, California	211	84	127	60
Ripley, CDP, California	295	218	77	26
Thermal, CDP, California	761	684	77	10
Thousand Palms, CDP, California	3,705	2,849	856	23
Ehrenberg, CDP, Arizona	948	645	303	32
Quartzsite Arizona	3,378	2,027	1,351	40
Totals	**157,803**	**93,772**	**43,559**	**28**
Counties				
Riverside County, California	800,707	686,260	114,447	14
La Paz County, Arizona	16,049	9,198	6,851	43

CDP= Census Designated Place
Source: CEC, 2013

Table 3.13-5. Vacancy Status Within Regional and Local Study Areas

	Vacant		For Rent		For Sale		Seasonal or Other Use		Other Vacant	
Geographic Area	No.	%	No.	%	No.	%	No.	%	No.	%
Bermuda Dunes, CDP, California	697	19	298	43	80	11	250	36	69	10
Blythe, California	960	18	248	26	100	10	448	47	167	17
Cathedral City, California	3,948	19	786	20	472	12	2,138	54	552	14
Coachella, California	905	9	197	22	388	43	104	12	216	24
Desert Center, CDP, California	55	39	13	24	6	11	23	42	13	24
Indian Wells, California	2,392	46	85	4	124	5	2,028	85	155	6
Indio, California	5,593	19	1,166	21	810	14	2,986	53	631	11
Mecca, CDP, California	166	8	100	60	9	5	17	10	40	24
Mesa Verde, CDP, California	48	13	33	69	5	10	5	10	5	10
Palm Desert, California	13,956	38	1,616	12	798	6	10,418	75	1,124	8
Palm Springs, California	12,048	35	1,744	14	974	8	8,151	68	1,179	10
Palo Verde, CDP, California	127	60	10	8	7	6	91	72	19	15
Ripley, CDP, California	77	26	49	64	2	3	4	5	22	29
Thermal, CDP, California	77	10	30	39	2	3	6	8	39	51
Thousand Palms, CDP, California	856	23	85	10	102	12	565	66	104	12
Ehrenberg, CDP, Arizona	303	32	47	16	22	7	215	71	19	6
Quartzsite Arizona	1,351	40	78	6	106	8	1,087	81	80	6
Totals	**43,559**	**28**	**6,585**	**15**	**4,007**	**9**	**28,536**	**66**	**4,434**	**10**
Riverside County, California	114,447	14	25,547	16	18,417	16	50,538	44	27,945	19
La Paz County, Arizona	6,851	43	586	5	370	5	5,318	78	577	8

CDP= Census Designated Place
Other Vacant = includes "rented, not occupied, sold, migratory workers"
Source: CEC, 2013

Campground/RV Parks

Other housing opportunities are available in recreational vehicle (RV) facilities, mobile home sites, and campgrounds. Under some circumstances, these types of facilities could be usable by project construction workers as temporary housing. Generally, their lower cost for overnight use could make them more attractive as a potential temporary housing resource. Particularly for construction workers who may own their own RV or trailers, RV parks with utility hook-ups and other amenities would be more suitable for use during the summer and could serve as a longer-term rental for workers who prefer a weekly commute.

As described in the PSEGS 2013 FSA, there are approximately 795 RV spaces in the vicinity of Blythe (CEC, 2013). RV parks in Blythe tend to be located along the Colorado River and receive higher levels of use during the summer. It was determined in the PSPP RSA that a large number of these RV spaces are occupied by year-round residents or are privately owned, and therefore unavailable for use by construction workers (CEC, 2010). Additional RV parks are located in Ehrenberg and Quartzsite, Arizona, which contain approximately 94 RV spaces and 1,876 RV spaces, respectively (CEC, 2013). These Arizona campgrounds are occupied between October and March, with visitors attracted to the gem, mineral, and swap meets and shows that are popular tourist attractions in the area (CEC, 2010).

Long-term camping is available by permit in Long-Term Visitor Areas (LTVAs) on BLM lands. There are two LTVAs located near the project site: Mule Mountains LTVA, which includes two primitive campgrounds (i.e., Wiley's Well and Coon Hollow); and Midland LTVA, which is located north of the City of Blythe. BLM also operates another LTVA within the local study area at La Posa, south of Interstate 10 near Quartzsite, Arizona. LTVAs are intended for recreation use only and workers would generally not be permitted to use these areas (PSPP RSA Section C.8, 2010). However, BLM may allow temporary LTVAs to be established on site for construction workers for the duration of project construction as temporary lodging facilities (BLM, 2011).

Except for "special areas" with specific camping regulations, vehicle camping is allowed anywhere on BLM-administered land within 300 feet of any posted Open Route. There are, however, no facilities in these locations and there is a 14-day limit for camping in any one location. After 14 days, campers wishing to stay in the area longer are required to move 25 miles from their original camp site (PSPP RSA Section C.8, 2010).

3.13.3 Existing Economic Conditions

Employment statistics by industry sector and county for 2011 are summarized in Table 3.13-6 (BLM, 2013). Government is Riverside County's largest employment sector, accounting for over 20 percent of the total jobs in the County. Additional important industries in the area include construction, manufacturing, retail trade, and services (e.g., professional, business, educational, health, and hospitality). San Bernardino County has an industry employment profile similar to that of Riverside County, and in La Paz County, key employment sectors include mining and logging, government, and retail trade.

Table 3.13-6. Employment by Industry Group – 2011

		Riverside County		San Bernardino County		La Paz County	
NAICS Code	Industry Group	Persons	Percent of Total	Persons	Percent of Total	Persons	Percent of Total
11-000000	Total Farm	12,800	2.33	2,100	0.35	241	3.23
10-000000	Mining and Logging	400	0.07	600	0.10	771	10.33
20-000000	Construction	34,300	6.25	24,500	4.11	190	2.55
30-000000	Manufacturing	39,000	7.11	46,800	7.85	203	2.72
41-000000	Wholesale Trade	19,900	3.63	29,500	4.95	91	1.22
42-000000	Retail Trade	79,400	14.47	77,800	13.06	1,198	16.05
43-000000	Transportation, Warehousing & Utilities	20,300	3.70	48,200	8.09	—[1]	—
50-000000	Information	9,600	1.75	5,300	0.89	54	0.72
55-000000	Financial Activities	18,300	3.33	20,900	3.51	443	5.94
60-000000	Professional & Business Services	52,700	9.60	73,400	12.32	489	6.55
65-000000	Educational & Health Services	61,600	11.22	76,300	12.81	372	4.98
70-000000	Leisure & Hospitality	69,300	12.63	55,000	9.23	—[1]	—
80-000000	Other Services	19,000	3.46	20,300	3.41	—[1]	—
90-000000	Government	112,200	20.44	115,100	19.32	2,298	30.79
	Total	**548,800**	**100**	**595,800**	**100**	**7,436**	**100**

1 - BEA does not provide these numbers to avoid disclosure of confidential information, but the estimates for these items are included in the total.
Source: BLM, 2013

Labor Force

Table 3.13-7 presents the labor force, unemployed workers, and unemployment rates of the study area counties from 2007 to 2012 (PSEGS Draft SEIS Section 3.14, 2013). In 2012, Riverside County had a labor force of 944,500 workers, with an unemployment rate of 12.2 percent, which was higher than the statewide unemployment rate of 10.5 percent in 2012, but lower than the County unemployment rates from 2009 to 2011 (PSEGS Draft SEIS Section 3.14, 2013). The San Bernardino–Riverside-Ontario Metropolitan Statistical Area (MSA), which includes both Riverside and San Bernardino Counties, has a similar current and historic unemployment rate to that of Riverside County alone.

In Arizona, La Paz County had an estimated average labor force of 7,687 workers in 2012, with unemployment at 9.2 percent, giving an unemployed labor force of just 705 workers.

Table 3.13-7. Labor Force and Unemployment in the Study Area

	2007	2008	2009	2010	2011	2012
Riverside-San Bernardino-Ontario, CA MSA						
Labor force	1,766,900	1,776,400	1,775,700	1,799,900	1,795,000	1,805,400
Employed	1,664,000	1,629,800	1,541,900	1,541,700	1,551,500	1,586,800
Unemployed	102,900	146,600	233,800	258,200	243,500	218,600
Unemployment rate	5.8%	8.3%	13.2%	14.3%	13.6%	12.1%

Table 3.13-7. Labor Force and Unemployment in the Study Area

	2007	2008	2009	2010	2011	2012
Riverside County, CA						
Labor force	903,400	912,900	917,000	938,400	939,600	944,500
Employed	849,900	835,200	794,300	802,300	810,400	828,800
Unemployed	54,500	77,800	122,700	136,200	129,200	115,600
Unemployment rate	6.0%	8.5%	13.4%	14.5%	13.7%	12.2%
La Paz County, AZ						
Labor force	7,590	7,529	7,700	7,668	7,519	7,687
Employed	7,215	6,965	6,947	6,858	6,763	6,982
Unemployed	375	564	753	810	756	705
Unemployment rate	4.9%	7.5%	9.8%	10.6%	10.1%	9.2%

Source: BLM, 2013.

Labor Force Growth Projections

Table 3.13-8 presents labor force estimates and projections in the San Bernardino-Riverside-Ontario MSA for those skilled workers (by craft) that may be required for construction and operation of the Project (BLM, 2013). Employment figures for 2010 are provided, as well as employment projections for the selected occupations for 2020. As of 2010, there were moderately high numbers of skilled workers in Riverside and San Bernardino Counties, including metal workers (13,530), carpenters (10,140), and construction laborers (11,870) (BLM, 2013).

Relevant specialized positions generally were fewer in number, including paving, surfacing, and tamping equipment operators, power plant operators, and construction trade helpers. Employment figures for all occupations presented are anticipated to increase by 2020. The two occupations with the largest anticipated future job growth by 2020 are construction laborers (1,510 new jobs) and metal workers and plastic workers (1,610 new jobs). The highest rate of job growth by occupation in Riverside and San Bernardino Counties is paving, surface, and tamping equipment operators (22.5 percent) (BLM, 2013).

No County-level employment projections for La Paz County are available. Given the small size of the available Arizona labor force within the regional study area, any future growth to the La Paz labor force would have a very minor change in future employment for construction occupations (BLM, 2013).

Table 3.13-8. Local Labor Pool by Craft – Riverside and San Bernardino Counties

	Annual Average Employment		Employment Change		Average Annual Job Openings		
Occupational Title	2010	2020	Number	Percent	New Jobs	Net Replacements	Total
Construction							
Construction Managers	5,000	5,490	490	9.8	49	32	81
Carpenters	10,140	10,450	310	3.1	30	215	245

Table 3.13-8. Local Labor Pool by Craft – Riverside and San Bernardino Counties

Occupational Title	Annual Average Employment		Employment Change		Average Annual Job Openings		
	2010	2020	Number	Percent	New Jobs	Net Replacements	Total
Cement Masons and Concrete Finishers	2,420	2,570	150	6.2	15	38	53
Construction Laborers	11,870	13,380	1,510	12.7	151	95	246
Paving, Surfacing, and Tamping Equipment Operators	400	490	90	22.5	8	8	16
Operating Engineers and Other Construction Equipment Operators	2,510	3,030	520	20.7	52	58	110
Electricians	4,000	4,520	520	13.0	52	108	160
Plumbers, Pipefitters, and Steamfitters	3,160	3,570	410	13.0	41	91	132
Metal Workers and Plastic Workers	13,530	15,140	1,610	11.9	166	255	421
Helpers – Construction Trades	2,000	2,280	280	14.0	34	53	87
Welders, Cutters, Solderers, and Brazers	2,650	3,090	440	16.6	44	71	115
Architects, Surveyors, and Cartographers	1,070	1,280	210	19.6	20	23	43
Engineering Managers	1,180	1,340	160	13.6	16	23	39
Supervisors of Construction and Extraction Workers	4,540	5,240	700	15.4	70	105	175
Machinists	2,440	2,830	390	16.0	40	45	85
Structural Iron and Steel Workers	700	670	-30	-4.3	0	14	14
Construction Total	**67,610**	**75,370**	**7,760**	**11.5**	**788**	**1,234**	**2,022**
Operation							
Plant and System Operators	1,770	1,910	140	7.9	15	50	65
Maintenance and Repair Workers, General	9,140	10,360	1,220	13.3	123	168	291
Operation Total	**10,910**	**12,270**	**1,360**	**12.5**	**138**	**218**	**356**

Source: BLM, 2015.

3.13.4 Fiscal Resources

A summary of Riverside County's expenses and revenues for the 2010-2011 fiscal year is provided in Table 3.13-9 (BLM, 2013). As the Project would be constructed in Riverside County, the County would be the local agency with taxing power and could be expected to receive the majority of the direct impacts from the Project in the form of additional expenses or revenues (from business and sales taxes, permits, and other sources).

For the fiscal year 2010-2011, revenues for Riverside County totaled approximately $2.6 billion, and expenditures totaled $2.7 billion (BLM, 2013). Riverside's key expenditures were on public protection, public assistance, and health. Its primary revenue sources were other government agencies, property taxes, and charges for County-provided services.

Table 3.13-9. Riverside County Expenses and Revenues for FY 2010-2011

	Amount	Percent
Expenses (Total)	**$2,662,570,257**	**100**
General Government	182,365,482	6.8
Public Protection	1,040,282,249	39.1
Public Ways and Facilities	166,639,057	6.3
Health	350,804,051	13.2
Public Assistance	811,224,131	30.5
Education	19,605,628	0.7
Recreation & Cultural Services	411,911	0.0
Debt Service	86,292,475	3.2
Transfers Out	4,945,273	0.2
Revenue Sources (Total)	**$2,593,155,749**	**100**
Property Taxes	419,297,189	16.2
Other Taxes	46,694,507	1.8
Licenses, Permits, Franchises	28,491,140	1.1
Fines, Forfeitures and Penalties	96,079,643	3.7
From Use of Money and Property	20,989,701	0.8
From Other Governmental Agencies	1,508,962,163	58.2
Charges for Current Services	426,952,421	16.5
Miscellaneous Revenue	24,775,902	1.0
Other Financing Sources	7,311,330	0.3
Transfers In	13,601,753	0.5

Source: BLM, 2013

3.13.5 Public Services

The Project would be serviced by the same public service providers as the PSPP. The following summarizes the public services applicable to the Project.

Police. The project site is served by the Riverside County Sheriff's Department Colorado River Station at 260 North Spring Street in Blythe, California. Communities included in this station's service area are Desert Center, Eagle Mountain, East Blythe, Hayfield, Midland, Nicholls Warm Springs, Ripley, and the Colorado River. As described in the PSEGS FSA, the Colorado River Station has 27 sworn officers and 10 non-sworn officers with two to three officers on duty per shift (CEC, 2013).

Fire. Fire support services to the project site would be under the jurisdiction of the Riverside County Fire Department (RCFD). The nearest RCFD fire station is the Lake Tamarisk Station #49 located at 43880 Lake Tamarisk in Desert Center, about 13 miles from the Project. The estimated response time is 14 minutes once dispatched. The second nearest station would be the

Blythe Air Base Station #45 located about 40 miles east, with a response time of about 30 minutes once dispatched. The fire station in Indio (Terra Lago Station #87 located at 42900 Golf Center Parkway, about 59 miles west of the Project) would also respond if necessary, with a response time of 45 minutes once dispatched. All RCFD fire stations are staffed full-time with a minimum of three personnel per shift which includes paramedics (CEC, 2013).

Schools. The local study area is served by two school districts: (1) the Palo Verde Unified School District (PVUSD), serving the city of Blythe and other remote areas of Riverside County; and (2) the Desert Center Unified School District in Desert Center (CEC, 2013). PVUSD includes three elementary schools, one middle school, one high school, and one continuation high school. Desert Center Unified School District includes one school, which serves kindergarten through eighth grade (CEC, 2013).

3.14 Soil Resources

The analyses of impacts on soil resources for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.9, Soil and Water Resources (CEC, 2010 (pages C.9-10 through C.9-13 and C.9-15 through C.9-16).
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.15, Soils Resources (BLM, 2010).

The affected environment and regulatory information presented in this section relies primarily on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated information from a new biological technical report conducted for the PSP (Ironwood, 2017) and information on the soil characteristics and regional climate of the project area. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

3.14.1 Regulatory Framework

Federal

The following federal, state, and local laws and policies apply to the soil resources within the project area.

Federal Land Policy and Management Act of 1976 as Amended

The Federal Land Policy and Management Act (FLPMA) establishes policy and goals to be followed in the administration of public lands by the BLM. The intent of FLPMA is to protect and administer public lands within the framework of a program of multi-use and sustained yield, and the maintenance of environmental quality. Particular emphasis is placed on the protection of the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resources and archaeological values.

California Desert Conservation Area Plan

The California Desert Conservation Area (CDCA) Plan defines multiple use classes for BLM-managed lands in the CDCA. With respect to soils, the CDCA Plan notes the need for better understanding of the interrelationships between activities occurring within the CDCA and the soil resources on the land.

Desert Renewable Energy Conservation Plan

The Desert Renewable Energy Conservation Plan is a Land Use Plan Amendment (LUPA) to the CDCA identifying areas appropriate for renewable energy development, as well as areas important for biological, environmental, cultural, recreation, social, and scenic conservation, consistent with the FLPMA multiple-use and sustained yield requirements. The BLM published the Land Use Plan Amendment (LUPA) and Final EIS for the DRECP in November 2015. The Record of

Decision for the DRECP LUPA was signed in September of 2016. With respect to soils, the DRECP provides Conservation and Management Action designed to protect sensitive soils within the CDCA.

State of California

California Building Code

The California Building Code (2013 Edition) contains a series of construction project standards: design and construction, including grading and erosion control. The 2013 edition is based on the 2012 International Building Code (excluding Appendix Chapter 1) published by the International Code Council.

3.14.2 Existing Conditions

The Palen Solar Project site is located in the Mojave Desert Geomorphic Province. The Province is a broad interior region of isolated mountain ranges separated by expanses of desert plains and is characterized by interior enclosed drainages and many playas. The project site lies near the toe of alluvial fans emanating from the Chuckwalla Mountains to the south, the Coxcomb Mountains to the north, and the Palen Mountains to the northeast. The elevation of Chuckwalla Valley ranges from under 400 feet at Ford Dry Lake to approximately 1,800 feet above mean sea level (amsl) west of Desert Center and along the upper portions of the alluvial fans that ring the valley flanks. The surrounding mountains rise to approximately 3,000 and 5,000 feet amsl (BLM, 2011; CEC, 2010).

The ground surface in the region of the site generally slopes gently downward to the southeast at a gradient of less than 1 percent. Ground surface elevations at the project site itself range from approximately 680 feet amsl in the southwest to 425 feet amsl in the northeast. The existing topographic conditions of the site show an average slope of approximately one foot in 75 feet (1.33%) toward the northeast. Steeper grades are present at isolated sand dunes along the northern portion of the site. Toward the north and central portions of the site, the ground becomes hummocky as it transitions to playa (BLM, 2011; CEC, 2010).

The climate in the Chuckwalla Valley is arid and has low precipitation. The region experiences a wide range in temperature, with very hot summer months with an average maximum temperature of 108 degrees Fahrenheit (°F) in July and cool dry winters with an average maximum temperature of 66.7 °F in December. The Blythe area receives approximately 3.5 inches of rainfall per year. The majority of the rainfall occurs during the winter months, but rainfall during the late summer is not uncommon. The summer rainfall events tend to be a result of tropical storms that have a short duration and a higher intensity than the winter rains. Annual average precipitation ranges from 0.02 to 0.48 inches per month (WRCC, 2016).

Prevailing winds in the vicinity of the Project vary seasonally, and indicate two dominant wind directions during typical years. During the spring and summer months, the strongest winds are associated with monsoonal storm events, and come from the south. During the fall and winter months, the prevailing winds are associated with Pacific Ocean derived weather patterns, and come from the north-northwest (BLM, 2011; CEC, 2010).

3.14.2.1 Soil Characteristics

The Natural Resources Conservation Service (NRCS) is the leading resource for soil surveys that detail soil characteristics of an area. Soil units described by the NRCS are classified as a 2nd Order survey at a scale of 1:20,000 with delineations of 1.5 to 10 acres. The NRCS has not mapped the soil at the project site (NRCS, 2015). General soils data discussed here were derived from the United States General Soil Map which is a 4th Order survey (4th Order surveys are less detailed — scale of 1:63,360 to 1:250,000). The data are not designed for use as a primary tool for permitting or siting decisions. They do serve as a general reference to general soil conditions (BLM, 2011; CEC, 2010).

The NRCS Regional Soil Map shows two soil map units on the project site: (1) the Rositas–Dune land–Carsitas map unit and (2) the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit. The gen-tie line overlies the Vaiva Quilotosa-Hyder-Cipriano-Cherioni map unit. The Rositas-Dune land-Carsitas map unit occurs on 54 percent of the site and is characterized by soils with a very high sand percentage (greater than 95 percent) and is highly susceptible to wind erosion. The remaining 46 percent of the site was mapped as the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit characterized by soils with high percentage (greater than 65 percent) of sand with moderate susceptibility to wind erosion. These data were used in conjunction with field observations and laboratory testing conducted as the result of field reconnaissance to better characterize the soils on site (BLM, 2011; CEC, 2010).

The NRCS has not mapped soils at the site as part of the Riverside County soil survey. A preliminary site reconnaissance was completed by the PSPP Applicant at the project site in 2008 and two soil samples were collected. Based on the reconnaissance and the samples collected, soils on site were described as consisting of sandy material and classified as poorly graded sand with silt. Across most of the project site, the soils would be expected to range from silty sand to poorly graded sand with silt. Laboratory textural analysis and field observations characterized the on-site soils as being predominantly sands and laboratory analysis measured sand content from 83 to 94% (BLM, 2011; CEC, 2010).

The laboratory and field observations are not consistent with the descriptions of the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit from the NRCS Regional Soil Map. However, this is not unexpected, based on the relatively low resolution of mapping data. The data from the current investigation are considered more accurate than the generalized soils map. Therefore, the Rositas-Dune land-Carsitas map unit is considered the representative soil type at the project site. Active sand dunes are located in the northern portion of the project site (BLM, 2011; CEC, 2010).

Detailed soil descriptions come from the NRCS Official Series Descriptions. Table 3.14-1 includes information about soil characteristics of the Rositas–Dune land–Carsitas map unit including depth, texture, drainage, permeability, and erosion hazard of individual soil mapping units. Land capability classification is an indicator of the soils' primary limitations for revegetation. Soils on the plant site include VIIe Capability Subclasses, which indicate that the soils are unsuitable for cultivation and production of commercial crops.

Table 3.14-1. Soil Series

Soil Series Name	Description
Rositas	Wasco Series – Fine Sand ▪ Formed in sandy eolian material ▪ Somewhat excessively drained ▪ Slopes range from 0 to 30 percent with hummocky or dune micro relief ▪ Negligible to low runoff ▪ Rapid permeability ▪ High susceptibility of wind erosion
Rositas	Rositas Series – Sandy Loam ▪ Dunes and sand sheets ▪ Very deep, well drained ▪ Slopes range from 0 to 30 percent with hummocky or dune micro relief ▪ Negligible to low runoff ▪ Rapid permeability ▪ High susceptibility of wind erosion
Carsitas	Carsitas Series – Gravelly Sand ▪ Formed in alluvial fans, moderately steep valley fills and dissected remnants of alluvial fans ▪ Excessively drained ▪ Slopes range from nearly level to strongly sloping ▪ Flow runoff except during rare torrential showers ▪ Rapid Permeability ▪ High susceptibility of wind erosion
Dune land	Dune lands – Sand ▪ Dunes can be as much as 25 feet high but are generally 10 feet high ▪ Very slow runoff ▪ High hazard of wind erosion ▪ None or slight hazard of water erosion

Source: BLM, 2011; CEC, 2010

3.14.2.2 Geomorphology – Sand Migration and Dunes

Geomorphology is the study of the landforms and relief patterns that make up the earth's surface. The Palen Solar Photovoltaic Project is located within and adjacent to the Palen Sand Dunes system (BLM, 2015). Aeolian systems are driven by wind. They are determined by the interactions of three main factors: sediment supply, sediment availability (i.e., its ability to be transported by the wind), and wind transport capacity. The DRECP Final EIS describes the aeolian (wind-blown) soil formation as a process that "proceeds by progressive infiltration of fine-grained dust, chemical deposition, and weathering within sediment deposits." This process results in soil layering that strongly affects the water permeability and moisture-holding capacities of desert soils.

Sand dune systems form where winds are consistently strong enough to lift just above the ground and push (or "saltate") fine sand grains across the dune surface, especially where there is little or no vegetation to stabilize the loose soil. Sandy alluvium in dry washes and alluvial fans are examples of sources for these materials, and strong winds generally transport the sands to areas with topographic irregularity, such as at the mountain front, where decreasing winds deposit sand. Except in high-force winds, wind does not typically suspend and transport sand high into the air (BLM, 2015).

The project site is located within the Chuckwalla Valley, a region of active aeolian sand migration and deposition. Active aeolian sand migration occurs in migration corridors in the northeastern section of the project site and to the northeast of the site. Aeolian processes play a major role in

the creation and establishment of sand dune formations and habitat in the Chuckwalla Valley and those within the project area.

The sand corridor stretches down the Chuckwalla Valley to Blythe and the Colorado River but the amount (if any) of Palen-Ford dunefield sand that reaches the Colorado River is unknown. At a macroscale, the site is part of the Clark's Pass sand ramp running from NW to SE from the Dale Lake playa in the southern Mojave Desert north of Joshua Tree National Park (San Bernardino County) to sediment sinks in the Palen-Ford dune field in Sonoran Desert of Riverside County. Winds enable the sand ramp to surmount topographic barriers that otherwise separate the Dale Lake Basin and the Palen-Ford Basin (BLM, 2011).

The project area covers several different soil land units (see Figure 3.14-1, Land Units, in Appendix A) including (from southwest to northeast) a currently stable coarse gravel alluvial fan surface with some relict sand dunes that have largely deflated (blown away) and a more active wind-blown sand area with relatively shallow sand deposits. The Palen Solar Photovoltaic Project is located inside and outside the area of deeper and more active vegetated sand dunes that provides habitat for the Mojave Fringe Toed Lizard (MFTL; discussed in detail in Section 3.23, Wildlife Resources).

In the southern and western sectors of the project site, the surface is a mixture of deflated vegetated dunes with thin coarse sand and patches of alluvial gravel and desert varnish with little available fine loose sand for transport to dunes downwind. Moving north and east in the project site, the fan surface has sandier conditions and transitions from creosote shrub to grasses. This area has shallow vegetated sand dunes and sand sheets that are less deflated and that have more abundant sand than the dunes in the mid fan. The dunes appear to be in relative equilibrium; losses of sand due to wind erosion are matched by deposition of sand from upwind. There is evidence of moderate levels of wind-borne sand transport, and this surface appears to form the outer zone of the sand transport corridor. Moving north and east, the vegetated dunes become deeper and the sand becomes more abundant. This area has hummocky vegetated dunes with greater topographic expression than the zone to the west, implying that they are more actively supplied by sand. This area is characterized as MFTL sand dune habitat and this portion of the sand transport corridor is more active than the shallow vegetated sand dunes (BLM, 2011; CEC, 2010).

Regional aeolian system studies indicate that the prevailing wind responsible for sand transport is from the northwest toward the southeast and locally controlled by topography (mountain ranges). The dominant sand migration direction within the corridors is toward the east and south. Sand delivered from upwind is deposited, replenishing sand that has been lost downwind. Three aeolian sand migration corridors occur in the Chuckwalla Valley region:

- The Dale Lake–Palen Dry Lake-Ford Dry Lake sand migration corridor along the Chuckwalla Valley;
- The Palen Valley–Palen Dry Lake sand migration corridor, where sand is transported southeast along the Palen Valley; and
- The Palen Pass–Palen–McCoy Valley sand migration corridor, located between the Palen and McCoy Mountains, where sand is transported in a southerly direction/towards the Chuckwalla Valley.

The Project lies within the Palen-Ford sand migration corridor. The sand migration appear to be driven primarily by winter/Pacific ocean oriented winds, which generally blow from the north-northwest (BLM, 2011; CEC, 2010).

Nearly half of the project disturbance area (1,622 acres; Ironwood, 2016) would be located in stabilized and partially stabilized sand dunes, wash habitat, and other areas with soils characteristic of active aeolian sand migration and deposition. Additional sand is added to corridors from local wind corridors that can be thought of as "sand corridor tributaries" and by fluvial sources. The activity and location of sand transport corridors are not fixed in time or space. Sand corridors can expand, contract or migrate with changing weather and climate. The sand migration corridor where the Project is sited can be further divided into discrete zones that characterize differing rates of sand transport, for correlation to MFTL habitat sensitivity.

The sand migration corridor near the project site has been divided into four zones for describing the sand migration process at and near the Project (see Figure 3.14-2, Sand Transport Zones Characterizing Varying Rates of Sand Transport, in Appendix A). Zone 1 has the greatest rate of sand transport and Zone 3 the lowest rate. Zone 4 is designated to the south of the borders of Zones 2 and 3, and represents an area where wind transport is not a significant process for sand migration (and subsequently is estimated to have low sensitivity and value as MFTL habitat). The greatest abundance of MFTL has been observed in Zone 2 (discussed in detail in Section 3.23, Wildlife Resources) due to the combination of active wind transport and vegetation cover. There are fewer MFTL in Zone 1 (where there is abundant sand but little vegetation). Therefore, Zone 2 and Zone 3 represent the most sensitive zone within the sand migration corridor proximate to the project site (Ironwood, 2016; BLM, 2011; CEC, 2010).

3.15 Special Designations

The previous analyses of impacts on special designations for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.6, Land Use and Planning, Agriculture and Forest Resources, Wilderness and Recreation.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.16, Special Designations.

The affected environment and regulatory information presented in this section relies primarily on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated specially designated land in the project area as a result of the 2016 Desert Renewable Energy Conservation Plan Record of Decision. This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

Two systems of federally managed lands are in the vicinity of project. In December 2008, the Secretary of the Interior signed a Secretarial Order to officially designate the 258 million acres of lands managed for multiple-use by the BLM as the *National System of Public Lands*. The project site and the vast majority of the federally administered public lands in the vicinity of the site are managed as part of this system and include designated wilderness areas, lands with wilderness characteristics, areas of critical environmental concern (ACECs), and back country byways. The second system of federally managed lands is the *National Park System*. Joshua Tree National Park, a National Park Service (NPS)-managed component of this system, is located approximately 7 miles from the project site and would be within the viewshed of the Project.

3.15.1 Regulatory Framework

Special designations on public lands are established through the BLM's land use planning process, Congressional legislation, or Executive Orders and include, but are not limited to, National Monuments, National Conservation Areas (NCAs), Wilderness, National Scenic or Historic Trails, Wild and Scenic Rivers, Cooperative Management and Protection Areas, Outstanding Natural Areas, National Recreation Areas, Forest Reserves, and Areas of Critical Environmental Concern. These designations also may be part of the BLM's National Landscape Conservation System (NLCS) as described in Public Law 111-11 Sec. 2002(b). There are four designated wilderness areas within approximately 20 miles of the project site. There are no National Monuments, National Scenic or Historic Trails, Wild and Scenic Rivers, Cooperative Management and Protection Areas, Outstanding Natural Areas, National Recreation Areas, or Forest Reserves within 20 miles of the project site.

Other special designations are defined in the Federal Land Policy Management Act or have been established through the BLM's land use planning process. Such designations include wilderness study areas (WSAs), Areas of Critical Environmental Concern (ACECs), Scenic or Back Country Byways, watchable wildlife viewing sites, wild horse and burro ranges, and other special designations identified in BLM Handbook H-1601 – Land Use Planning Handbook, Appendix C, III,

Special Designations. There are five ACECs and one Back Country Byway within about 20 miles of the project site. Although the project site includes acreage that formerly was included in a wilderness study area, the designation was released decades ago. There are no WSAs, Scenic Byways, designated watchable wildlife viewing sites, or wild horse and burro ranges in the vicinity of the site (BLM, 2011).

Wilderness Act of 1964

Wilderness Areas (WAs) are designated by Congress, under the authority of the Wilderness Act of 1964 (16 USC 1131–1136) as part of the National Wilderness Preservation System, and are managed by one of the following four land management agencies: the BLM, the U.S. Fish and Wildlife Service (USFWS), the U.S. Department of Agriculture (USDA) Forest Service, or the National Park Service. These agencies are authorized to manage wilderness areas for the public's use and enjoyment in a manner that will leave such areas unimpaired for future use and enjoyment as "wilderness" by providing for the protection and preservation of their wilderness character and by gathering and disseminating information about their use and enjoyment. The Wilderness Act (16 USC Sec 1131-1136) defines "wilderness" as an "area where the earth and its community of life are untrammeled by man." A designated wilderness area is defined as having four primary characteristics, including the following:

- a natural and undisturbed landscape;
- outstanding opportunities for solitude and unconfined recreation;
- at least 5,000 contiguous acres; and
- feature(s) of scientific, educational, scenic, and/or historic value

Motorized-vehicle access is prohibited in wilderness areas except under certain circumstances (i.e., where access is required to private property, to facilitate activities associated with valid mining claims or other valid occupancies, to fulfill fish and wildlife management responsibilities under jurisdiction of the California Department of Fish and Game or the U.S. Fish and Wildlife Service, or to accomplish certain administrative and law enforcement operations, including fire suppression and search and rescue operations). Opportunities for the general public to stop, park, or base camp with vehicles inside wilderness are not available.

Federal Land Policy Management Act of 1976 (FLPMA)

The Federal Land Policy and Management Act of 1976 (FLPMA), as amended, 43 United States Code (USC) Section 1701 et seq., provides the authority for the BLM land use planning. Section 102 (a) (7) and (8) sets forth the policy of the United States concerning the management of the public lands. FLPMA requires that "goals and objectives be established by law as guidelines for public land use planning, and that management be on the basis of multiple use and sustained yield unless otherwise specified by law" (Section 102[7]). Public lands therefore are to be managed for multiple uses, and management must consider the long-term needs of future generations for renewable and non-renewable resources (BLM, 2015).

Areas of Critical Environmental Concern (ACECs)

The designation of Areas of Critical Environmental Concern was authorized in Section 202 (c)(3) of FLPMA, and was designed to be used as a process for determining the special management required by certain environmental resources or hazards (BLM, 1980). ACECs are BLM-specific, administratively designated areas within public lands where special management attention is required to protect life and safety from natural hazards or to protect and prevent irreparable damage to important historic, cultural, or scenic values; fish and wildlife resources; or other natural systems or processes (FLPMA, 43 USC 1702(a); 43 CFR 1601.0-5(a)). By itself, the designation does not automatically prohibit or restrict uses in the area; instead, it provides a record of significant values that must be accommodated when BLM considers future management actions and land use proposals.

Wilderness Study Areas (WSAs)

The BLM, through Section 603(a) of FLPMA or established by statute, manages 80 Wilderness Study Areas in California, totaling over 1,360,000 acres. Such areas are roadless, generally at least 5,000 acres, and consist of islands of public lands that have the wilderness characteristics. These characteristics include naturalness, outstanding opportunities for solitude, and outstanding opportunities for primitive and unconfined recreation. BLM is required to manage WSAs so as not to impair their suitability as wilderness until Congress decides whether it either should be designated as wilderness or should be released for other purposes.

California Desert Conservation Area Plan (CDCA)

The California Desert Conservation Area is a 25-million-acre expanse of land in southern California designated by Congress in 1976 through FLPMA. The BLM administers about 10 million of those acres. When Congress created the CDCA, it recognized its special values, proximity to the population centers of southern California, and the need for a comprehensive plan for managing the area. Congress stated that the CDCA Plan must be based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The site of the Proposed Action and alternatives is located within the CDCA. The primary active wildlife management tools used in the CDCA Plan are ACECs. All Public Lands within the California Desert District were analyzed and summarized in 1979 wilderness inventory decisions performed pursuant to the FLPMA. Public land within the project site is contained within CDCA Wilderness Inventory Units (WIU) #CDCA 325, 330, and 331.

WIU #CDCA 325 encompassed a large area. The boundary was generally tied on the west to Highway 177; on the north to Highway 62 and an aqueduct; and on the east to Midland-Rice Road. The 1979 decision determined that the Palen–McCoy Wilderness Study Area (WSA) had wilderness characteristics. Public lands not included in the WSA, including those lands now being analyzed for the Project, were those where impacts from anthropogenic activity were substantially noticeable. These included impacts from mining, extensive networks of vehicle ways on some bajadas, and sites used by the U.S. Army for desert tank training during WWII. The CDPA of 1994 designated the Palen-McCoy WSA into a wilderness area. The boundary for the wilderness area was similar to the boundary of the WSA.

WIU #CDCA 330 was a narrow, elongated area bordered by a pole line access road to the north and by Interstate 10 to the south. This relatively flat, linear area has little topographic relief and ranges from sparsely vegetated creosote to nearly nonexistent vegetation on Ford Dry Lake. The area has been disturbed by man. Fence enclosures are located throughout the area, along with past evidence of development and two wells. With an average width of 1 to 2 miles, the confining nature of the unit severely restricts opportunities for solitude or a primitive and unconfined type of recreation. As such, the 1979 decision was that no portion of this unit had wilderness characteristics and no public lands were identified as a WSA.

WIU #CDCA 331 was bordered on the northeast by a maintained road; on the south, by Interstate 10; and, on the northwest, by Highway 177. This area is relatively flat and includes creosote and some ironwood vegetation. Much of the western portion is in private land ownership. Impacts from anthropogenic activity is substantially noticeable within this area, especially on the large portion of privately owned lands. Such lands include buildings, roads, and an airport. Opportunities for solitude or a primitive and unconfined type of recreation are limited due to the confining nature of the area and the inability of topographic features to screen visitors from one another. As such, the 1979 decision determined that no portion of this unit had wilderness characteristics and no public lands were identified as a WSA.

Relevant portions of the Wilderness Inventories for the three WIUs were maintained pursuant to section 201(a) of the FLPMA. The current conditions existing in 2011 are essentially the same as in 1979. In summary, no changes have occurred since 1979 that would result in findings that differ from the 1979 decision that wilderness characteristics were not present in the project area. [PSPP PA/FEIS Section 3.16 and PSPP RSA Section C.6]

Northern and Eastern Colorado Desert Coordinated Management Plan

The Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) amends the CDCA plan and was prepared under the regulations implementing FLPMA. The NECO plan established regional standards for public land health and set forth guidelines for grazing management. The NECO plan also combined herd management areas for wild horses and burros, designated routes of travel, identified principles for acquisition of private lands and disposal of public lands, provided access to resources for economic and social needs; and incorporated 23 wilderness areas established by the 1994 CDPA in the CDCA (BLM, 2011). Two former Wildlife Habitat Management Areas identified in the NECO Plan overlap the project site: the Palen-Ford Proposed WHMA and the Desert Wildlife Management Area (DWMA) Continuity WHMA. These land use designations are overridden by the DRECP LUPA and are no longer in effect.

California Desert Protection Act of 1994

The CDPA designated 69 WAs on BLM-managed public lands in the California Desert. The CDPA states that "wilderness is a distinguishing characteristic of the public lands in the California desert" and "The wilderness values of desert lands are increasingly threatened by development." The CDPA further states that there are no buffer zones designated along with wilderness areas: "The fact that non-wilderness activities or uses can be seen or heard from areas within a wilderness area shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area" [Public Law 103-433, Section 103(d)] (BLM, 2011).

Omnibus Public Land Management Act of 2009

The Omnibus Public Land Management Act specifies that public lands within the California Desert Conservation Area administered by the BLM for conservation purposes would be included as part of the BLM's National Landscape Conservation System (NLCS). [Public Law 103-433, Section 103(d)]. The NLCS provides a framework for managing conservation areas that are specially designated with the goal of preserving, protecting, and restoring the scientific, ecological, and cultural characteristics of the land. This includes national monuments, national conservation areas, wilderness, wilderness study areas, national and scenic historic trails, scenic rivers, and California Desert conservation lands. New National Heritage Areas were designated and the boundaries of several existing wilderness areas were extended, including the Palen-McCoy Wilderness and the Chuckwalla Mountains Wilderness (BLM).

Desert Renewable Energy Conservation Plan

The Desert Renewable Energy Conservation Plan was developed as a collaboration between the California Energy Commission, California Department of Fish and Game, Bureau of Land Management, and the U.S. Fish and Wildlife Service. The DRECP, which amended the CDCA Plan, was intended to facilitate the development of utility-scale renewable energy and transmission projects in the Mojave and Colorado deserts in California to reach federal and state energy targets while conserving sensitive species and habitats as well as cultural, scenic, and social resources. Phase I of the DRECP, composed of the BLM Land Use Plan Amendment (LUPA) and affecting federal lands only, was approved in September 2016 with the signing of the Record of Decision. The LUPA applies only to BLM-managed federal lands, which corresponds to approximately 10,869,000 in the LUPA Decision Area, and amends the California Desert Conservation Area (CDCA) Plan and the Bishop and Bakersfield Resource Management Plans (BLM, 2015).

3.15.2 Existing Conditions

The Palen Solar Project is located in eastern Riverside County, on BLM-administered federal land. No lands with special designations would be directly affected by the project, but there are several land use designations within the area. Special designations within about 10 miles of the project site are described below, to account for the potential views of the Project from these areas.

The CDCA Plan, as amended by the DRECP LUPA, changes land use designations near the project site. However, the Project itself is not subject to the DRECP. The Project is located on land designated as a Development Focus Area (DFA) for solar energy development. DFAs include approximately 388,000 acres of BLM-administered public lands on which activities related to solar, wind, and geothermal development, operation, and decommissioning can occur.

The PSP would be developed entirely on federal land, but there are privately owned parcels adjacent, including farmland.

Figure 3.15-1 (Special Designations Near Proposed Palen Solar Project) illustrates the locations of the various land designations near the Project. The following paragraphs describe these areas (BLM, 2015).

California Desert National Conservation Lands (CDNCL)

California Desert National Conservation Lands are lands included in the National Landscape Conservation System (NLCS) within the California Desert Conservation Area (CDCA) per Public Law 111-11. These lands are areas that have been identified as having nationally significant ecological, cultural and scientific values and are managed to conserve, protect, and restore these values. Of the 10.8 million acres of BLM-administered public lands within the CDCA, approximately 3.9 million acres are currently designated part of the NLCS. CDNCL in the vicinity of the project site are: the Palen-McCoy Wilderness, Chuckwalla Mountains Wilderness, Alligator Rock ACEC, Palen Dry Lake ACEC, Palen-Ford Playa Dunes ACEC, Corn Springs ACEC, Desert Lily Preserve ACEC, some of the Chuckwalla ACEC north of I-10, and parts of the Chuckwalla SRMA.

Designated Wilderness Areas

Palen-McCoy Wilderness

The Palen-McCoy Wilderness encompasses approximately 236,488 acres and is approximately 2 miles northeast of the project site (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). Within it are the Granite, McCoy, Palen, Little Maria, and Arica Mountains, which are five distinct mountain ranges separated by broad sloping bajadas. Because this large area incorporates so many major geological features, the diversity of vegetation and landforms is exceptional. The desert wash woodland found here provides food and cover for burro deer, coyote, bobcat, gray fox, and mountain lion. Desert pavement, bajadas, interior valleys, canyons, dense ironwood forests, and rugged peaks form a constantly changing landscape pattern. State Highway 62 near the Riverside County line provides access from the north, and Interstate 10 via the Midland Road near Blythe provides access from the south. The area is accessible by four-wheel drive vehicles only. Mechanized or motorized vehicles are not permitted in a wilderness (BLM, 2011).

Chuckwalla Mountains Wilderness

The Chuckwalla Mountains Wilderness is approximately 99,548 acres and lies south of I-10, approximately 1.5 miles south of the project site (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). Within the area is the Chuckwalla Mountains. Included within this rock fortress are a variety of landforms, textures, and colors. Steep-walled canyons, inland valleys, large and small washes, isolated rock outcrops, and vast desert expanses interact to form a constantly changing panorama. The plant and wildlife species are as uniquely diverse. Bighorn sheep, burro deer, raptors, snakes, coyotes, and foxes inhabit the area. The southwestern bajada region has been identified as highly crucial habitat for the desert tortoise. Ocotillo, cholla, yucca, creosote, and barrel and foxtail cactus cover the landscape and provide seclusion. Hunting, fishing, and non-commercial trapping are allowed. Pets are allowed and horses are permitted. Camping is permitted, with the condition that it is limited to 14 days. Access to the wilderness is from the north via I-10. Eastern access via Corn Springs and Du Pont Roads is provided by the Corn Springs exit on I-10. The Red Cloud Road exit from I-10 provides access from the west and the Bradshaw Trail provides access to the wilderness from the south. Mechanized or motorized vehicles are not permitted in a wilderness (BLM, 2011).

Little Chuckwalla Wilderness

The Little Chuckwalla Wilderness is 28,034 acres and also lies south of I-10, approximately 16 miles southeast. It includes rugged mountains surrounded by a large, gently sloping bajada containing a network of washes. To the north, a bajada gently rises to 400 feet, while the nearby mountains crest at 2,100 feet. Habitat for bighorn sheep and desert tortoise can be found in portions of this region and the southern bajada has been identified as crucial desert tortoise habitat. Several sensitive plant species grow here, including the California snakeweed, Alverson's foxtail cactus, and the barrel cactus. Interstate 10 provides northern access to Little Chuckwallas via the Ford Dry Lake exit; Graham Pass Road from the west; and Teague Well four-wheel drive route from the east. Both routes access the Bradshaw Trail to the south, which connects to Wileys Well Road (BLM, 2011).

Wilderness Study Areas (WSAs)

The closest existing wilderness study areas to the site are the Beauty Mountain Wilderness Study Area, approximately 30 miles west of the city of Temecula in San Diego County, and the Cady Mountain Wilderness Study Area between Barstow and Baker along I-40 in San Bernardino County. Both wilderness study areas are approximately 100 miles from the project site (BLM, 2011).

Back Country Byway

The Bradshaw Trail is a 65-mile National Back Country Byway located about 17 miles south of the project site that extends from about 35 miles southeast of Indio to about 15 miles southwest of the City of Blythe. It was the first road through Riverside County, blazed by William Bradshaw in 1862 as an overland stage route beginning in San Bernardino, California, and ending at Ehrenberg, Arizona. The trail was used extensively between 1862 and 1877 to transport miners and passengers. The trail is a graded dirt road that traverses mostly public land between the Chuckwalla Mountains and the Chocolate Mountain Aerial Gunnery Range. Recreational opportunities include four-wheel driving, wildlife viewing, plant viewing, birdwatching, scenic drives, rockhounding, and hiking (BLM, 2011).

National Park Lands

The Joshua Tree Wilderness is approximately 594,502 acres and is managed by the National Park Service as part of Joshua Tree National Park. The Joshua Tree National Park is nearly 800,000 acres (NPS, 2016). It lies 140 miles east of Los Angeles, 175 miles northeast of San Diego, and 215 miles southwest of Las Vegas. One of three park entrance locations is at Cottonwood Spring, which lies 25 miles east of Indio and near the project site. Joshua Tree National Park is open year-round, although the peak time for visitors is April. Over 2 million people visited the park in 2015 (NPS, 2016).

The Joshua Tree Wilderness is bordered by the Sheephole Valley Wilderness to the north and the Pinto Mountains Wilderness to the north (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). It is approximately 10 miles north of I-10 and abuts State Highway 177 to the west. The lower, drier Colorado Desert dominates the eastern half of the wilderness, home to abundant creosote bushes, ocotillo, and the cholla cactus. The slightly cooler and moist Mojave

Desert covers the western half of the wilderness, serving as a breeding ground for the Joshua trees. Five fan-palm oases are located in this wilderness area, which sustains local palms trees. A diverse variety of desert wildlife species, such as Bighorn sheep, eagles, and kangaroo rats occupy this wilderness. The steep elevations provide views to the south and east which overlook the Project. Aerial photography shows no trails or other established routes within this Wilderness segment (BLM, 2011).

Areas of Critical Environmental Concern (ACEC)

The following six ACECs are located within about 10 miles of the site (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). Each is described in more detail in the following paragraphs (BLM, 2015).

- Alligator Rock ACEC consists of 7,754 acres. It is located 6 miles west of the site and was also established based on the suitability of the acreage for wilderness designation and to protect cultural and scientific resource values.
- The Palen Dry Lake ACEC is approximately 3,506 acres. It is located approximately 0.5 miles northeast of the project site and was established to protect cultural and biological resource values and lands with wilderness characteristics.
- The Palen-Ford Playa Dunes ACEC is approximately 12,437 acres and is about 1.1 miles north of the project site. It is designated to protect biological and cultural resource values.
- The Corn Springs ACEC is approximately 2,467 acres and 5.5 miles southwest of the site. This ACEC has significant cultural and biological resource value.
- The Desert Lily Preserve ACEC is 6 miles northwest of the site and is designated to protect sensitive natural, scenic, ecological, and cultural resource values of its 2,055 acres.
- The Chuckwalla ACEC is approximately 0.25 miles southwest of the project site and is 352,633 acres. This ACEC has cultural, scenic, vegetative and wildlife values.

Alligator Rock ACEC

Alligator Rock ACEC is located approximately 6 miles west of the project site (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). The DRECP LUPA did not increase the size of this ACEC, but it did establish 6,212 acres of BLM's NLCS within the ACEC. The management goals for this area are to protect and preserve cultural and spiritually important resources and provide appropriate compatible public uses. Relevance and Importance Criteria include:

- Cultural value: National Register Sites; CA-RIV-1383, North Chuckwalla Mountains Petroglyph District; and CA-RIV-1814, The North Chuckwalla Prehistoric Quarry
- Natural processes value: meteorological, geological, hydrological, and topographical features have been identified as important climate refugia for wildlife species

Chuckwalla ACEC

The Chuckwalla ACEC is approximately 0.25 miles southwest of the project site (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). The DRECP LUPA increased the

ACEC by 20,772 acres and established 318,762 acres of NLCS within the ACEC. The management goals for this area are to protect and improve habitat for sensitive and rare ecological resources, consider and respond to climate changes and opportunities to increase ecological resilience to climate changes, reduce hazards to public safety, provide appropriate compatible public uses, maintain habitat connectivity between the proposed Chuckwalla NLCS and Joshua Tree National Park, and protect the cultural values of the site. Relevance criteria for this ACEC include cultural, scenic, wildlife, and vegetative values.

Palen Dry Lake ACEC

The Palen Dry Lake ACEC is located approximately 0.5 miles northeast of the project site (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). The DRECP LUPA established 3,625 acres of BLM's NLCS within the existing ACEC. The management goals for this area are to protect archeological sites and provide appropriate compatible public uses. The relevance criterion for this ACEC is primarily cultural (Native American) values.

Palen-Ford Playa Dunes ACEC

The Palen Ford Playa Dunes ACEC is approximately 2 miles north of the project site (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). The DRECP LUPA established 41,370 acres as the ACEC and 21,436 acres of BLM's NLCS within the ACEC. The management goals for this area are to maintain the integrity of critical fringe-toed lizard habitat and critical ecological processes, namely the sand transport system and sand sources in the ACEC; prevent excessive groundwater removal that could threaten dune and playa dependent vegetation alliances; protect cultural resources related to the Palen and Ford playas; and ban activities that may result in adverse effects to landscapes or to National Register Eligible sites or artifacts. Relevance and Importance Criteria include wildlife, vegetative, and cultural (archaeological) values.

Corn Springs ACEC

The Corn Springs ACEC is approximately 5.5 miles southwest of the project site (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). The DRECP LUPA did not change the acreage of the ACEC but established 911 acres of BLM's NLCS within the ACEC. The management goals for this area are to protect the integrity of Native American, scenic, hydrological, recreational, and ecological resources of the area and to provide appropriate compatible public uses. Relevance and Importance Criteria for this ACEC include:

- Cultural (Native American) value: a series of Native American prehistoric trails, including a classification as a Scenic Quality Class A and a Visual Resource Management Class II
- Scenic value
- Hydrological value: a 480-acre Public Water Reserve No. 22; wildlife and vegetation extremely dependent on hydrological features
- Recreational value: heavy public use for recreation purposes
- Wildlife and vegetation value: a particularly high diversity of wildlife and five rare plant species

Desert Lily Preserve ACEC

The Desert Lily Preserve ACEC is 6 miles northwest of the project site (see Figure 3.15-1, Special Designations Near Project Site). The DRECP LUPA did not change the acreage of the ACEC but established 2,051 acres of BLM's NLCS within the ACEC. The management goals for this area are to protect vegetation from impacts from anthropogenic activity and to provide appropriate compatible public uses. The Relevance and Importance Criteria for this ACEC include:

- Vegetative value: renowned for spectacular flora displays after the winter rains
- Cultural value: areas adjacent to washes likely support both surface and subterranean cultural resources; vegetation communities present were, and remain, important to Native Americans for obtaining traditional natural resource materials

Special Recreation Management Areas (SRMA)

One SRMA is located within a 10-mile radius of the Proposed Action, the Chuckwalla SRMA.

Chuckwalla SRMA

The Chuckwalla SRMA is located just south of the project site directly across the I-10 (see Figure 3.15-1, Special Designations Near Proposed Palen Solar Project). The DRECP LUPA established 228,476 acres of SRMA on BLM lands. This SRMA contains two Recreation Management Zones (RMZ): the Chuckwalla Mountains Wilderness RMZ and the Corn Springs RMZ. The Chuckwalla Mountains Wilderness RMZ is 99,548 acres between I-10 and the Bradshaw Trail Back Country Byway. Popular activities here include camping, hiking, horse-riding, hunting, and sightseeing. The Corn Springs RMZ covers the entire central Chuckwalla Mountains Wilderness. Popular activities here include camping and hiking. This area is an important Native American cultural resource. The goal of designating this area as a SRMA is to allow local residents, visitors, and commercial recreation providers to participate in motorized and non-motorized recreation activities that are appropriate and compatible to ACEC values.

3.16 Transportation and Public Access – Off Highway Vehicle Resources

This section describes the baseline conditions pertaining to transportation for the Palen Solar Project. The analyses of social and economic impacts on recreation for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 California Energy Commission (CEC) Revised Staff Assessment (RSA) for the PSPP, Section C.10, Traffic and Transportation.
- For CEQA, the 2013 CEC Final Staff Assessment (FSA) for the PSEGS (solar power tower analysis), Section 4.10, Traffic and Transportation.
- For CEQA, the 2014 CEC Revised Presiding Member's Proposed Decision for the PSEGS.
- For NEPA, the PSPP (solar trough analysis): the 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.17, Transportation and Public Access.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.17, Transportation and Public Access.

The affected environment and regulatory information presented in this section relies primarily on the above documents where it was still relevant, but it has been updated in specific areas. This section incorporates updated regulatory information and data from a new traffic impact assessment conducted for the PSP (EDF RE, 2016). This information is combined with the still-current data from the previous documents and used to evaluate potential impacts of the Proposed Action.

3.16.1 Regulatory Framework

Federal

14 CFR Part 77 – Safe, Efficient Use, and Preservation of the Navigable Airspace. Construction of a project could potentially impact aviation activities if a structure or equipment were positioned such that it would be a hazard to navigable airspace. The Federal Aviation Administration (FAA) has established reporting requirements for construction or alterations around airport and heliport facilities that meet certain criteria regarding final height above ground level and penetration of an imaginary conical surface extending out from the air facility.

With regard to aviation safety, Subpart B, Section 77.9 of the regulations indicates that for areas around airports having runways longer than 3,200 feet, if any construction that is more than 200 feet above ground level or results in an object penetrating an imaginary surface extending outward and upward at a ratio of 100 to 1 from a public or military airport runway out to a horizontal distance of 20,000 feet (approximately 3.78 miles), then an applicant is required to submit FAA Form 7460 1, Notice of Proposed Construction or Alteration, to the Manager, Air Traffic Division, FAA Regional Office having jurisdiction over the area for review and approval of the Project (FAA, 2016). For areas around heliports, this same requirement applies to any construction that is more than 200 feet above ground level or would penetrate an imaginary surface extending outward and upward at a ratio 25 to 1 from a public or military heliport out to a horizontal distance of 5,000 feet.

State

California Vehicle Code (CVC), Division 2, Chapter 2.5; Division 6, Chapter 7; Division 13, Chapter 5; Division 14.1, Chapter 1 & 2; Division 14.8; and Division 15 (DMV, 2016) include regulations pertaining to licensing, size, weight, and load of vehicles operated on highways; safe operation of vehicles; and the transportation of hazardous materials (including fuels).

Caltrans Guide for the Preparation of Traffic Impact Studies (TIS) identifies the following criterion as a starting point in determining when a TIS is needed for a project (Caltrans, 2002):

1. Generates over 100 peak hour trips assigned to a State highway facility.
2. Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS "C" or "D").
3. Generates 1 to 49 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing significant delay; unstable or forced traffic flow conditions (LOS "E" or "F").

Interstate 10, which provides regional access to the project site, is an applicable Caltrans roadway. The need for a separate full TIS analysis was not warranted or prepared for the Project, as discussed in Section 4.16.

Local

Riverside County Ordinance No. 499 gives the Riverside County Transportation Department the authority to require that permits be obtained for any type of work conducted within a County road right-of-way (ROW), which in many cases extends beyond the paved road to the adjacent private property boundary. This requirement extends to excavation, placement of structures, and any other work within a County ROW.

The Riverside County General Plan Circulation Element contains the following policy relevant to the Proposed Action (Riverside County, 2014):

- *Policy C 2.1: Maintain the following countywide target levels of service (LOS):*[1]
  - *LOS C along all County-maintained roads and conventional state highways. As an exception, LOS D may be allowed in Community Development areas, only at intersections of any combination of Secondary Highways, Major Highways, Urban Arterials, Expressways, conventional state highways or freeway ramp intersections.*

The Riverside County Transportation Commission (RCTC) oversees the County Congestion Management Plan (CMP). RCTC does not require Traffic Impact Assessments for development proposals. However, local agencies are required to maintain minimum LOS thresholds included in their respective general plans. Therefore, Traffic Impact Assessments on developments are

[1] LOS is defined as a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. LOS is expressed as A through F, with LOS A (best operating conditions characterized by free-flow traffic, low volumes, and little or no restrictions on maneuverability) — the best operating conditions — to LOS F (forced traffic flow with high traffic densities, slow travel speeds, and often stop-and-go conditions) — the worst.

required by the local agencies. Local agencies whose development impacts cause the LOS on a non-exempt segment to fall to LOS F must prepare deficiency plans. These plans outline specific mitigation measures and a schedule for mitigating the deficiency (RCTC, 2015).

3.16.2 Existing Conditions

As stated in the PSPP PA/FEIS and PSPP RSA, recreational and motorized travel opportunities on public lands at the project site are guided by the California Desert Conservation Area Plan (CDCA) and the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) Plan. The BLM reviewed the land use designation of the site through the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) in a November 2015 Final EIS. The Record of Decision for the DRECP LUPA was signed in September of 2016.

The LUPA, which amends the CDCA Plan, identifies the Palen site location as being within a Development Focus Area (DFA), which is an area where the activities associated with solar, wind, and geothermal development, operation, and decommissioning would be allowed. The DRECP LUPA eliminated the multiple use classes, so the MUC Class M-Moderate Use designation no longer applies at this location, although the types of recreation that occur in the region would not necessarily change. This class is based on a controlled balance between higher intensity use and protection of public lands and provides for a wide variety of present and future uses such a mining, livestock grazing, recreation, energy, and utility development. However, the Palen Solar Project is not subject to the DRECP so this Supplemental EIS/EIR analyzes impacts as if the MUC Class M were still applicable. The following section discusses public access and Off-Highway Vehicles (OHV) use of public lands. For this section, the terms off-road vehicle and off-highway vehicle are used interchangeably, although OHV is the term most used by the BLM and in other federal land use planning efforts.

Public Access

The BLM designates the public lands it administers as open, limited, or closed to off-road vehicles pursuant to Executive Order 11644 (1972), Use of Off-Road Vehicles on the Public Lands, as amended in 1974 by Executive Order 11989; and other authorities, including the Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.), BLM planning regulations (43 CFR Part 1600), and BLM Land Use Planning Handbook H-1601-1.

OHV Routes

The CDCA Plan and NECO Plan Amendment state that vehicle access is among the most important recreation issues in the desert. A primary consideration of the recreation program is to ensure that access routes necessary for recreation enjoyment are provided. For purposes of OHV management, vehicle access in MUC-M areas is directed toward use of approved ("open" or "limited") routes of travel, or "open washes." Under the CDCA Plan, as amended, BLM-administered public lands within the CDCA are designated as Open, Limited or Closed. Within open areas, motorized vehicles may travel anywhere; in closed areas, such travel is prohibited. There are no BLM-designated open OHV areas in Riverside County. In limited areas, motorized-vehicle access is allowed only on certain routes of travel, defined to include roads, ways, trails, and washes. The DRECP LUPA does not change the status of the routes within the project area (BLM, 2015).

OHV routes area also designated open, closed, or limited with the following definitions (BLM, 2011):

- *Open Route:* Access by all types of motorized vehicles is allowed generally without restriction.
- *Limited Route:* Access by motorized vehicles is allowed, subject to limitations on the number and types of vehicles allowed and restrictions on time or season and speed limits.
- *Closed Route:* Access by motorized vehicles is prohibited except for certain official, emergency, or otherwise authorized vehicles.

A route has high significance if it provides access to other routes, historical sites, or recreational areas such as the backcounty driving, photography, camping, rock hounding and hiking opportunities in eastern Riverside County.

The project site has approximately 9 miles of designated open routes. OHV recreational opportunities on the site are limited to driving or riding on these routes. Routes of travel, other than washes, are shown on Figure 3.16-1, Off-Highway Vehicle Routes in the Project Vicinity. The BLM has no traffic counters or other means to determine accurate usership numbers of routes in the vicinity of the project site. As stated in Section 3.17.1 of the 2011 PA/FEIS, observations by BLM staff and Law Enforcement Rangers report that use is relatively low on routes within the vicinity of the project site, not exceeding 300 visits per year. Recreation and vehicle use generally is limited to the cooler months of September through May. Use is nearly non-existent during the summer. Recreational vehicle use consists of touring in passenger cars, SUVs, motorcycles, and ATVs (BLM, 2011).

Washes Open Zones

Under the NECO Plan, all MUC-M areas are considered "washes open zones" unless specifically designated limited or closed, making the project site located within a washes open zone. The use of washes within "washes open zones" is restricted to those considered "navigable," unless it is determined that vehicle use must be further limited. Navigable washes in "washes open zones" are designated "open" as a class, that is, washes are not individually designated unless they are identified as specific routes in the NECO route inventory. In this context, the term "wash" is defined as a watercourse, either dry or with running or standing water, which by its physical nature, width, soil, slope, topography, vegetative cover, etc., permits the passage of motorized vehicles, thereby establishing its navigability (BLM, 2011).

There are approximately 100 minor dry washes that cross the site from southwest to northeast, draining the area downstream of I-10 towards Palen Dry Lake. There are two more significant ephemeral wash complexes that cross the site from southwest to northeast, draining the area downstream of I-10 towards Palen Dry Lake. The BLM has not inventoried or analyzed specific washes in the project area as to their navigability, but by the above definition, all or portions of these washes may be considered navigable through a portion of the project site. As is the case with designated routes, the BLM has no means to determine accurate use of "open wash zones" in the vicinity of the project site (BLM, 2011).

Transportation

Regional and Local Roadways

Interstate 10 (I-10) is an east-west regional arterial highway that provides regional access to the project area, running from the Los Angeles area east to Phoenix, Arizona. The speed limit on I-10 near the Project is 70 miles per hour and the road is fully improved to freeway status with two lanes in each direction (4-lane highway). Year 2014 average daily traffic (ADT) volumes on I-10 at Corn Springs Road was 24,200 vehicles per day (Caltrans, 2014). These represent the most recently published ADT nearest the Project. Year 2014 peak hour traffic volume on I-10 at Corn Springs Road was 2,800 each direction or 5,600 total. The capacity of the I-10 both west and east of the Project is 8,000 cars (BLM, 2011). I-10 operates at a LOS B.

Corn Springs Road provides local access to the project site from an exit off I-10 accessed by a diamond-configured interchange. The interchange includes single-lane ramps with ramp junctures, where stop signs control traffic from I-10 before it enters Corn Springs Road. Corn Springs Road is a relatively short road that runs north toward the project site, as well as south, where it intersects with Chuckwalla Valley Road. Corn Springs Road has curb and gutter, but no bicycle or pedestrian facilities. While ADT volumes for Corn Springs Road are unavailable, due to the remote nature and lack of nearby housing or other uses, negligible traffic is expected to occur on the applicable segments of Corn Springs Road providing local access to the Project. Based on these traffic volumes, Corn Springs Road is expected to operate at LOS A.

Chuckwalla Valley Road provides local access to the project site and is a minor local access road running in an east-west direction just south of I-10. It is a two-lane frontage road extending from the southern part of the Corn Springs Road interchange to the Ford Dry Lake Road interchange approximately 10 miles to the east. Stop signs on the Chuckwalla Valley Road approaches control the Corn Springs Road/Chuckwalla Valley Road intersection. Chuckwalla Valley Road has curb and gutter, but no bicycle or pedestrian facilities. While ADT volumes for Chuckwalla Valley Road are unavailable, due to the remote nature and lack of nearby housing or other uses, negligible traffic is expected to occur on the applicable segments of Chuckwalla Valley Road providing local access to the Project.

Public Transportation

Rail. No commercial rail service is available near the site. In addition, no regional passenger railroad transportation exists in the immediate area. The nearest rail passenger service is at Amtrak Stations in Palm Springs, California and Yuma, Arizona.

Bus Service. There is no bus service to the project site. The nearest public bus routes is limited to Route 3 of the Desert Roadrunner/Palo Verde Valley Transit Agency bus service, which provides express service on weekday peak hours from Blythe to multiple California State prisons located along I-10, including the Ironwood/Chuckwalla Valley State Prison complex located approximately 21 miles east of the project site.

Bicycle and Pedestrian Facilities. Local bicycle and pedestrian activity in the vicinity of the project site is minimal-to-none. Development is extremely low-density and spread over a large area, which is not conducive to biking or walking. There are no bicycle or pedestrian facilities located

on I-10 near the project site; however, bicycles are allowed on I-10 from Dillon Road, Coachella (west of the project site) to Mesa Drive, Blythe (east of the project site). The State Department of Transportation (Caltrans) allows bicycle use on State highways where no alternative route is available.

Airports. The closest airfield to the project site is the privately operated Desert Center Airport, located at the end of an unnamed road approximately 5 miles northwest of the project site. The airport's runway is approximately 4,200 feet long. Chuckwalla Valley Associates, LLC, operates the airport to serve the Chuckwalla Valley Raceway. Airport use is light, with only 150 aircraft operations per year at the airfield for the 12-month period ending December 31, 2006, which is the most recently published data (AirNav, 2016).

3.17 Vegetation Resources

The analyses of impacts on vegetation resources for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.2, Biological Resources (CEC, 2010).
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.18, Vegetation Resources (BLM, 2011).

Section 3.18 of the PSPP PA/FEIS describes vegetation and habitat on the project site as it was proposed at that time (encompassing the disturbance resulting from the proposed construction of the Project, including solar fields, transmission facilities, office and maintenance buildings, lay down area, access roads, gen-tie line, and other components). This Supplemental EIS/EIR has been updated with information from recent biological surveys of the project site (Ironwood, 2017). The PSPP PA/FEIS also describes vegetation and habitat in a buffer area surrounding the project site. This buffer area is 1-mile wide for the solar facility footprint and 1,000 feet wide on either side for the gen-tie line (2,000 feet total).

3.17.1 Regulatory Framework

This section briefly describes the key federal, state, and local laws and regulations applicable to vegetation resources within the project site and surrounding area.

Federal Regulations

Federal Land Policy and Management Act of 1976 (FLPMA) (43 United States Code [USC] Section 1701, 1761; 43 Code of Federal Regulations [CFR] parts 1600 and 2800). Establishes public land policy; guidelines for administration; and provides for the management, protection, development, and enhancement of public lands. In particular, FLPMA is relevant to the Proposed Action because Title V, Section 501, establishes the authority of the Bureau of Land Management (BLM) to grant rights-of-way for generation, transmission, and distribution of electrical energy (FLPMA, 2001).

California Desert Protection Act of 1994 (CDPA). An Act of Congress which established 69 wilderness areas and the Mojave National Preserve, and expanded Joshua Tree and Death Valley National Monuments and redefined them as National Parks. Lands transferred to the National Park Service were formerly administered by the BLM and included substantial portions of grazing allotments, wild horse and burro Herd Management Areas, and Herd Areas.

California Desert Conservation Area (CDCA) Plan, 1980 as Amended. The CDCA comprises one of two national conservation areas established by Congress at the time of the passage of FLPMA, which outlines how the BLM will manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan. The 25-million-acre CDCA contains over 12 million acres of public lands administered by the BLM spread over the area known as the California Desert, which includes the Mojave Desert, the Sonoran Desert, and a small portion of the Great Basin.

The CDCA Plan is a comprehensive, long-range plan with goals and specific actions for the management, use, development, and protection of the resources and public lands within the CDCA. It is based on the concepts of multiple use, sustained yield, and maintenance of environmental quality. The plan's goals and actions for each resource are established in its 12 elements. Each element provides both a desert-wide perspective of the planning decisions for one major resource or issue of public concern and a more specific interpretation of multiple-use class guidelines for a given resource and its associated activities.

Northern and Eastern Colorado Desert Coordinated Management Plan (NECO Plan). The NECO Plan is a landscape-scale planning effort for most of the California portion of the Sonoran Desert ecosystem. The planning area encompasses over 5 million acres. The NECO Plan is a regional amendment to the CDCA Plan, approved in 2002. The NECO Plan protects and conserves natural resources while simultaneously balancing human uses in the northern and eastern portion of the Colorado Desert.

Desert Renewable Energy Conservation Plan (DRECP), Land Use Plan Amendment to the CDCA. The purpose of the DRECP is to conserve and manage plant and wildlife communities in the desert regions of California while facilitating the timely permitting of compatible renewable energy projects. The DRECP covers over 10 million acres of BLM land. The BLM Proposed Land Use Plan Amendment and Final Environmental Impact Statement for the DRECP was released in November 2015 and the BLM Record of Decision (ROD) for the DRECP was issued in September 2016. The Proposed Action is not subject to the DRECP LUPA.

Federal Endangered Species Act (FESA) (16 USC 1531 et seq.; 50 CFR Parts 17 and 402. FESA establishes legal requirements for the conservation of endangered and threatened species and the ecosystems upon which they depend. It is administered by the USFWS for terrestrial species, and by the National Marine Fisheries Service (NMFS) for marine species and anadromous fish. Under the FESA, the USFWS or NMFS may designate critical habitat for listed species. Section 7 of the FESA requires federal agencies to consult with USFWS or NMFS to ensure that their actions are not likely to jeopardize listed threatened or endangered species, or cause destruction or adverse modification of critical habitat. Section 10 of the FESA requires similar consultation for non-federal applicants.

Clean Water Act (CWA) (33 USC 1251-1376; 40 CFR 330.5(a)(26)). Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge of dredged or fill materials into jurisdictional waters of the U.S., including wetlands. As the CWA is administered in California, Section 401 requires that an applicant for a federal license or permit to conduct an activity that could result in a discharge to waters of the U.S. must provide the Federal agency with a certification from the applicable regional water quality control board (RWQCB) that any such discharge will comply with the CWA, including State and federal water quality standards.

Noxious Weed Act (7 USC Section 2814). This act provides for the "management of undesirable plants on federal lands."

Fish and Wildlife Coordination Act (16 USC Sections 661-666). Applies to any federal project where the waters of any stream or other body of water are impounded, diverted, deepened, or

otherwise modified. Requires consultation among USFWS and state wildlife agencies. Implemented through the NEPA process and CWA Section 404 permit process.

Forest Management (CFR Title 43: 5420.0-6). Directs that vegetation materials from BLM lands to be sold shall be appraised and in no case shall be sold at less than the appraised value. Includes all vegetative material that is not normally measured in board feet, but can be sold or removed from public lands by means of the issuance of a contract or permit. See also BLM Instruction Memorandum No. CA-2013-012 regarding application of this policy.

Executive Order 11988, Floodplain Management. This order directs federal agencies to avoid the long-term and short-term adverse impacts of occupancy and modification of floodplains, and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Executive Order 11990, Protection of Wetlands. This order directs federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Agencies must avoid supporting new construction in wetlands unless there is no practical alternative to such construction and the Proposed Action includes all practical measures to minimize harm to wetlands that may result from such use.

Executive Order 13112, Invasive Species. This order established the National Invasive Species Council and directs federal agencies to prevent the introduction of invasive species, provide for their control, and minimize the economic, ecological, and human health impacts caused by invasive species.

State Laws and Regulations

California Endangered Species Act (CESA) (Fish and Game Code Section 2050 et seq.). CESA prohibits take of State-listed threatened or endangered species, or candidates for listing, except as authorized by CDFW. Authorization may be issued as an Incidental Take Permit or, for species listed under both CESA and FESA, through a Consistency Determination with the federal incidental take authorization.

Significant Natural Areas (Fish and Game Code Section 1930 et seq.). Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.

Plants of California Declared to Be Endangered, Threatened or Rare (14 CCR 670.2) and Animals of California Declared To Be Endangered or Threatened (14 CCR 670.5). Lists the plants and animals of California that are declared rare, threatened, or endangered.

Natural Community Conservation Planning Act (NCCP) (Fish and Game Code Sections 2800 et seq.). The NCCP provides a regional approach to conservation for multiple species. The NCCP Program is implemented by CDFW as a cooperative effort by the State of California and private and public partners, to protect species and their habitats. The program helps identify and provide for large area-wide protection of plants, animals, and their habitats while allowing for compatible and appropriate economic activity. At the time of CDFW approval of an NCCP, CDFW may authorize by permit the taking of any covered species (i.e., a species whose conservation and management is provided for in the approved plan).

Native Plant Protection Act (NPPA) (Fish and Game Code Sections 1900-1913). Prior to enactment of CESA and FESA, California adopted the NPPA. CESA (described above) generally replaces the NPPA for plants originally listed as endangered under the NPPA. However, plants originally listed as rare retain that designation, and take is regulated under provisions of the NPPA. The California Fish and Game Commission adopted revisions to the NPPA allowing CDFW to issue incidental take authorization for listed rare plants, effective January 1, 2015.

California Desert Native Plants Act of 1981 (Food and Agricultural Code Section 80001 et seq.; California Fish and Game Code Sections 1925-1926). Protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. Harvesting, transporting, selling, or possessing specific desert plants is prohibited except by permit.

Lake and Streambed Alteration (Fish and Game Code Sections 1600-1616). The CDFW regulates activities that would divert, obstruct or change the natural flow, bed, channel, or bank of any river, stream, or lake in California designated by CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.

Porter-Cologne Water Quality Control Act (Water Code Section 13000 et seq.). Regulates surface water and groundwater and assigns responsibility for implementing federal CWA Section 401. Regulates discharges of waste and fill material to waters of the State, including "isolated" waters and wetlands. Establishes the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) to protect State waters. If a project extends into multiple RWQCB boundaries, it is subject to regulation by the SWRCB.

3.17.2 Existing Conditions

The Project would be located in in eastern Riverside County, just north of the Interstate-10 freeway, about 8 miles east of Desert Center (See Figure 1-2, Proposed Action, in Appendix A). The site is in the Chuckwalla Valley between the Chuckwalla and Palen Mountains and less than 2 miles from the southern edge of Palen Dry Lake. Hydrologically, the project site is located in the Colorado River Basin within the Chuckwalla Valley Drainage Basin. This is an internally drained basin and all surface water flows to Palen Dry Lake in the western portion of Chuckwalla Valley and Ford Dry Lake in the eastern section of Chuckwalla Valley.

The distinctive bi-modal climate of the Sonoran Desert, with a rainy season in both winter and summer, distinguishes it floristically from most of California, where warm dry summers and a single rainy season in winter are characteristic. In addition to being hotter and drier, the Sonoran Desert region also rarely experiences frost. Although the region supports numerous perennial species, including a wide variety of cacti, more than half of the region's plant species are herbaceous annuals, which appear only during periods of suitable precipitation and temperature conditions. The region also supports a number of rare and endemic plants and vegetation communities specially adapted to this bi-modal rainfall pattern, and not found elsewhere in California. These include microphyll woodlands, palm oases, and a number of summer annuals that only germinate after a significant warm summer rain (CEC, 2010).

The Chuckwalla Valley is a region of active aeolian (wind-blown) sand migration and deposition (CEC, 2010). Aeolian processes play a major role in the creation and establishment of sand dune habitat in Chuckwalla Valley. The dunes and sandfield habitats are essential for dune-endemic special status plant and wildlife species. The dominant sand migration direction is toward the east and south. Regional aeolian system studies indicate that the prevailing wind responsible for aeolian sand transport is from the northwest toward the southeast and locally controlled by topography (mountain ranges). Three aeolian sand migration corridors have been identified within the Chuckwalla Valley region: the Dale Lake–Palen Dry Lake–Ford Dry Lake sand migration corridor; the Palen Valley–Palen Dry Lake sand migration corridor; and the Palen Pass–Palen–McCoy Valley sand migration corridor (CEC, 2010).

The Palen-McCoy Wilderness is 3 miles to the northeast, Chuckwalla Mountains Wilderness is 1.5 miles to the south, Little Chuckwalla Mountains Wilderness is 16 miles to the southeast, and the Joshua Tree Wilderness is 8.5 miles northwest of the project site. Approximately 207 acres of the Chuckwalla desert tortoise critical habitat unit (CHU) overlaps the southern margin of project site, just north of the I-10 freeway. The majority of the CHU (over 1,023,000 acres) is located south and west of the project site. No project infrastructure will be located within the CHU.

3.17.2.1 Regional Setting

The project site is located in the central portion of Chuckwalla Valley, east of Palm Springs, in the Colorado Desert subsection of the Sonoran Desert. The elevation of Chuckwalla Valley ranges from under 400 feet above mean sea level at Ford Dry Lake to approximately 1,800 feet west of Desert Center and along the upper portions of the alluvial fans that surround the valley perimeter. The surrounding mountains rise to over 3,000 feet. The topography of the project site generally slopes downward to the northeast at a slight gradient of less than 1 percent. Elevations at the project site range from approximately 680 feet in the southwest to 425 feet in the northeast. Steeper grades are present at isolated sand dunes along the northern portion of the site.

Existing anthropogenic features and private land uses in the vicinity include agricultural, residential, renewable energy, energy transmission, historical military, and recreation development. Much of the agriculture has waned in the past 10 to 15 years, including most of the aquaculture (fish farms) and jojoba ventures; however, several crops are still grown, including a citrus orchard and date palm orchard immediately west of the project site. Approximately 1,600 acres of private lands are within one mile west of, and immediately adjacent to, the project site. Approximately 830 acres of these private lands support active agricultural practices on converted natural desert habitat.

Evidence of historical military use from the 1942 Desert Training Center can be found in the project vicinity. There are also many tracks of four-wheel-drive vehicles near the freeway, presumably made during freeway construction, that have disrupted the soil surface and are clearly evident in the interfluvial (land between streams or desert washes) desert pavement.

The Interstate 10 freeway (I-10) is located just south of the project site. The developed footprint of I-10 and associated wing dikes and bridges have altered natural habitat within and adjacent to the freeway. These alterations have changed surface hydrology to direct surface flows to wash crossings, and may also have altered the condition of natural habitat within the project site by

reducing sheet flow and increasing flow in channels. These alterations are further discussed below with regard to biological and hydrological resources.

Rainfall and Climate

The climate in the Chuckwalla Valley is arid and has low precipitation. The region experiences a wide range in temperature, with very hot summer months with an average maximum temperature of 108 degrees Fahrenheit (F) in July and cool dry winters with an average maximum temperature of 66.7 F in December (WRCC, 2016).

Prevailing winds in the vicinity of the project site vary seasonally, and indicate two dominant wind directions during typical years. During the spring and summer months, the strongest winds are associated with monsoonal storms, from the south. During the fall and winter months, the prevailing winds are associated with weather systems originating over Pacific Ocean, from the north-northwest.

The rainfall pattern is bi-modal with a rainy season in both winter and summer. The majority of rainfall occurs during the winter months, but rainfall during the late summer is not uncommon. The summer rainfall tends to be a result of tropical storms that have a short duration and a higher intensity than the winter rains. Precipitation ranges from 0.02 to 0.47 inches per month; average annual rainfall for the project vicinity is approximately 3.7 inches (CEC, 2010).

Measurements of precipitation during winter (October through March) and summer (April through September) periods are important in determining the efficacy of both desert tortoise and special status plant surveys. Data were obtained from the Western Regional Climate Center (WRCC, 2016) for the nearest weather stations to the project site: Blythe Airport and Eagle Mountain (approximately 26 and 13 miles from the project site, respectively). Historical rainfall data from 2009 to 2017 were totaled and averaged (Table 3.17-1). Over the period of analysis, the highest winter rainfall occurred in 2010 and highest summer rainfall occurred in 2012. Since 2014, annual winter and summer rainfall has measured less than 50 percent of the peaks in 2010 and 2012.

Table 3.17-1. Seasonal Rainfall, 2009 to 2017

Year	October to March (inches)	April to September (inches)
2009	2.4	0.2
2010	4.8*	0.1
2011	2.5	1.2
2012	1.0	3.3*
2013	1.5	2.6
2014	0.7	1.2
2015	2.1	1.3
2016	1.5	0.7
2017	3.4	n/a

* Maximum average recorded winter and summer rainfall during 2009–2017.

Hydrology

The project site is within the Chuckwalla Valley Drainage in the Colorado River Hydrologic Basin Planning Area. Palen Dry Lake and Ford Dry Lake represent the lowest elevations within the basin. Desert washes within this region usually carry no surface flow, but can occasionally carry dramatic high-discharge floods. The project site lies between the alluvial fans emanating from the Chuckwalla Mountains to the south, the Coxcomb Mountains to the north, and the Palen Mountains

to the northeast. The project site is characterized by fine sand and silt as compared to the upper alluvial fan reaches that support stabilized, rocky soils with well-defined channels.

Surface hydrology in the area is influenced largely by stormwater runoff from the northeastern flank of the Chuckwalla Mountains, approximately 4 miles south of the project site and south of the I-10. The main hydrologic feature in the watershed is Corn Springs Wash, which is supported largely by precipitation, but also in part by Corn Springs. The stream drains approximately 31 square miles of the Chuckwalla Mountains (CEC, 2010). Corn Springs Wash and all other desert washes in the watershed are ephemeral (flowing only in response to storm events).

Alluvial processes across the majority of the site generally flow from southwest to northeast. To the south, the I-10 was constructed over 45 years ago across the alluvial fan outlet of Corn Springs Wash (CEC, 2010). The I-10 and associated wing dikes have altered natural surface flows from dozens of meandering small alluvial washes into concentrated discrete channels. Flows from the Chuckwalla Mountains are routed under the I-10 via three bridge spans (Underpasses 10, 11, and 12) onto the project site. The westerly bridge (Underpass 10) near Corn Springs Road Interchange conveys flow from the main branch of Corn Springs Wash to the northwest corner of the site. This channel apparently carries the most substantial flow of the three; however, the prominent channels eventually spread out into numerous small channels within the relatively flat topography to the north of the I-10 (CEC, 2010). Underpasses 11 and 12 convey flows to the center and east side of the project site, respectively.

In arid fluvial systems such as the Palen project site, it is flash floods (particularly during the larger summer thunderstorms), combined with the highly erosive soils of alluvial fans that most contribute to the conversion from single thread channels to a compound or anastomosing (braided) morphology. At the foot of the Chuckwalla Mountains, where Corn Springs Wash and other features drain onto the alluvial fan of more erosive, less consolidated soils, the stream system changes from single thread channel to compound, braided channels with highly variable flow pathways. Compound channels are the most common channel types in arid regions and are characterized by low-flow meandering channels inset into a wider braided channel network. These channels are highly susceptible to widening and avulsions (rapid changes in channel position or location) during moderate to high discharges, reestablishing a low-flow channel during subsequent low flows. This channel avulsion creates diverse physical features and habitats, supports a complex ecosystem, and sustains healthy stream function despite frequent and rapid changes in channel position. As a result, arid fluvial systems usually exhibit long periods of little morphologic change interspersed with short-term dramatic changes in channel configuration. Therefore, arid stream geometry is more likely to be influenced strongly by a large event of low recurrence frequency. With any compound braided ephemeral stream system in arid regions, the riparian corridor may consist of streambanks lined with adapted riparian vegetation, unvegetated areas such as recently created swales and terraces (interfluves), or a mosaic of these types (CEC, 2010).

Soils

There are two general soil types shown within the project site on the United States General Soil Map: (1) the Rositas–Dune land–Carsitas map unit and (2) the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit (CEC, 2010). The Rositas-Dune land-Carsitas map unit is found on the northeastern 32 percent of the site and is characterized by soils with a very high sand percentage (greater

than 95 percent) and is highly susceptible to wind erosion. The remaining 68 percent of the site is mapped as the Vaiva-Quilotosa-Hyder-Cipriano-Cherioni map unit characterized by soils with high percentage (greater than 65 percent) of sand with moderate susceptibility to wind erosion. These data were used in conjunction with field observations and laboratory testing conducted as the result of field reconnaissance to better characterize the soils on site (CEC, 2010).

Soil profiles observed in the test pits were typically sands and laboratory analysis measured sand content from 83 to 94 percent. Silt content measured in the soils ranged from 2 to 8 percent, and clay content from 2 to 11 percent. Observed profiles exhibited a range of effervescence from none to slight in the top layers, but effervescence increased with depth indicating increasing percentages of carbonates (CEC, 2010).

3.17.2.2 Methodology

As used in this section, the term "project site" refers to the disturbance area of the Proposed Action, including the solar fields and related facilities and gen-tie line, an area of approximately 4,000 acres that encompasses the approximately 3,950-acre solar facility and 200-foot-wide, 7-mile-long interconnection (gen-tie) line. The term "project vicinity" refers to the general region where the project site is located. The "study area" or "survey area" includes the project site and surrounding buffer areas where biological surveys were conducted. The size of the study area varied between the 2009, 2010, 2013, 2016, and 2017 surveys, as described below.

Study Areas

The PSPP Biological Resources Study Area (BRSA) consisted of 14,771 acres that encompasses the project site and a surrounding buffer area. The majority of the BRSA was surveyed in 2009, with supplemental surveys performed in 2010 to address new alternative layouts at the time, resulting in an expanded BRSA. Surveys conducted for PSEGS in 2013 addressed changes to proposed disturbance areas including the natural gas line extension, distribution yard, and gen-tie line reroute. Surveys performed in 2016 focused on the proposed Palen Solar Project site, which included the solar facility and gen-tie line. Rainfall during the 2016-2017 winter was above-average, which provided an opportunity to gain greater confidence in special status plant species occurrence. Spring 2017 surveys included a systematic survey of: 2,326 acres within the solar facility area corresponding with sandy soils, 227 acres corresponding with sand sheets in Zone II and potential habitat for Harwood's eriastrum, and 209 acres associated with the gen-tie line. The original BRSA and supplemental survey areas are shown in Figure 3.17-1, Biological Survey Areas 2009-2016 (in Appendix A).

Surveys

Focused special status plant surveys were conducted during the following periods:

- February to April 2009 (PSPP BRSA)
- Spring 2010 (PSPP alternative disturbance areas)
- October 11 to 15, 2010 (PSPP BRSA, late blooming species)
- March 30, 2013 (PSEGS modified linear facilities)
- April 30 to May 15, 2016 (Palen Solar Project)
- March 22 to April 6, 2017 (selected areas of Palen Solar Project)

Target species for the botanical surveys included all listed threatened and endangered species, BLM designated Sensitive Species, and all California Rare Plant Rank (CRPR) List 1 through List 4 species (see Table 3.17-3). None of the plants included in the DRECP Focus Species list (Table III.7-33 in BLM, 2015) are present or potentially present on the project site.

For complete details on survey methodology, see the Biological Resources Technical Report prepared for the Palen Solar Photovoltaic Project in Appendix B.

3.17.2.3 Sand Transport System

The sand transport system located in the Chuckwalla Valley has been the subject of several studies, including Philip Williams and Associates (PWA, 2010), Kenney (2010), and Lancaster et al. (2014). Sand transport within the Chuckwalla Valley region involves an interaction between hydrological (alluvial and fluvial) and aeolian (wind-blown) processes. Studies have centered on two distinct objectives; (1) characterizing the existing conditions of sand transport, including evaluating the patterns of sand migration, and (2) assessing the potential impacts of solar development on the sand transport system resulting from proposed solar facilities.

The Chuckwalla Valley drainage system includes Palen Dry Lake and Ford Dry Lake, which represent the lowest elevations within the basin. Alluvial fans that emanate from the neighboring mountain ranges including the Chuckwalla Mountains, Coxcomb Mountains, and Palen Mountains entrain sediments during periods of surface flow and deposit the sediments downstream. Larger sediments "fall out" of the surface flows higher in the alluvial fan, while finer sand is deposited further down the alluvial fan. At the lowest reaches of alluvial wash system along the edges of the valley basins, finer sand accumulates and is subject to wind erosion, becoming a source of sand within a larger aeolian sand transport corridor (PWA, 2010).

Within the Chuckwalla Valley, sand accumulates within three primary aeolian sand transport corridors: (1) Dale Lake-Palen Dry Lake-Ford Dry Lake sand migration corridor along the Chuckwalla Valley; (2) Palen Valley-Palen Dry Lake sand migration corridor where sand is transported southeast along the Palen Valley; and (3) Palen Pass-Palen-McCoy Valley sand migration corridor, located between the Palen and McCoy Mountains, where sand is transported in a southerly direction towards the Chuckwalla Valley (BLM, 2011). Prevailing winds in this region vary seasonally, and indicate two dominant wind directions during typical years. During the spring and summer months, the strongest winds are associated with monsoonal storm events, and come from the south. During the fall and winter months, the prevailing winds are associated with Pacific Ocean derived weather patterns, and come from the north-northwest. Regional aeolian system studies indicate that the prevailing wind responsible for aeolian sand transport was locally controlled by mountain range topography (BLM, 2011). Sand delivered from upwind is deposited, replenishing sand that has been lost downwind. Additional sand is added to corridors from local wind corridors that can be thought of as "sand corridor tributaries" and by fluvial sources. The activity and location of sand transport corridors are not fixed in time or space. Sand corridors can expand, contract or migrate with changing weather and climate (PWA, 2010).

The project site is located within and adjacent to the Palen Dry Lake-Chuckwalla sand migration corridor, which is part of the Clark's Pass sand ramp running from northwest to southeast from the Dale Lake playa, north of Joshua Tree National Park (San Bernardino County), to sediment sinks in the Palen-Ford dune field in Sonoran Desert of Riverside County (Zimbelman et al., 1995).

Aeolian processes play a major role in the creation and establishment of sand dune formations and habitat in the Chuckwalla Valley (BLM, 2011). Winds enable the sand ramp to surmount topographic barriers that otherwise separate the Dale Lake Basin and the Palen-Ford Basin.

At a finer scale, the project site and adjacent lands have been characterized by four relatively discrete sand transport zones (Kenney, 2010) that vary along a southwest to northeast gradient in the degree of aeolian sand transport present (see Figure 3.14-2, Sand Transport, in Appendix A). PWA (2010) provided independent mapping of sand transport land units within the project area and acknowledged agreement with the delineation of sand transport zones mapped by Kenney (2010), except for the eastern limit of Zone I and degree of sand transport within Zones I and II (both outside the project boundary). PWA (2010) noted that the zones were "interwoven and gradual" and that hydrological and aeolian processes on the site occurred as a gradient, from southwest to northeast. Sand transport zones can expand, contract, or migrate with cycles of wet and dry conditions and with changing weather patterns and climate (PWA, 2010). An updated assessment using high resolution satellite imagery compared two images of the project site from June 21, 2010 and April 16, 2016 and found no substantial changes in the boundaries of the sand transport zones as described by Kenney (2010). The project site transitions from a stable, coarse gravel alluvial fan surface with some relict sand dunes that have largely deflated (blown away) in the southwest extent, to more active wind-blown sand with relatively shallow sand deposits, and finally an area of deeper and more active vegetated sand dunes in the northeastern extent and outside the project site. The sand transport zones are defined in the following paragraphs:

Zone I. Zone I is located outside and northeast of the project site. This is the most active area, having the greatest rate of sand transport of the four zones. Zone I supports active transverse dunes that are not stabilized and range from 8 to over 20 feet high. This area and portions of Zone II are included in the Palen Dune system. Potter and Weigand (2016) performed a comprehensive review of Landsat image spectral data between 1985 and 2014 to evaluate sand dune migration within the Palen Dunes. The study area was situated within the active dunes with sampling transects that were outside the project boundary, apart from the southernmost transect that was located adjacent to the northern project boundary. During the 30-year period of analysis, the study found that the aerial extent of the Palen Dunes had grown by 47 percent, active dune aerial extent had grown by 60 percent, and scattered shrub cover decreased by approximately 18 percent. The authors estimated that the Palen dune had migration rates up to 50 meters per year, with most active rates in 2014 and least active rates in 1995. These measurements were greatest in the middle of the Palen Dunes, with are over two kilometers north of the project site. The models indicated negligible dune formation within the periphery of the Palen Dunes, where the project site is located. Potter and Weigand (2016) found that no active threats to energy facilities at Chuckwalla Solar I and the Palen Solar I (approximate location of the Palen Solar Project) was evident and that the leading edge of sand accumulation in 2014 remained greater than two kilometers from the project site.

Zone II. Active aeolian sand migration occurs in migration corridors located along the north-eastern boundary of the project site. The vegetated dunes become deeper and the sand is more abundant in Zone II than in Zones III and IV (PWA, 2010). This area has hummocky vegetated dunes with greater topographic expression than the zones to the southwest, implying that they are more actively supplied by sand. This portion of the sand transport corridor is more active than the shallow vegetated sand dunes (Kenney, 2010). Lancaster et al. (2014) mapped Zone II as active

windblown deposits consisting of dunes and sand sheets typically greater than 1.5 meters in thickness with fine to medium grained sand. Approximately 228 acres of the project site is located within Zone II.

Zone III. Zone III consists of shallow vegetated sand dunes and sand sheets that are less deflated and that have more abundant sand than the dunes in Zone IV. The dunes appear to be in relative equilibrium; losses of sand due to wind erosion are matched by deposition of sand from upwind (PWA, 2010); however, this contrasts with observations by Kenney (2010) that aeolian landforms within this zone were more extensive in the past than at present and that alluvial processes have disturbed relic sand dunes. There is evidence of moderate levels of wind-borne sand transport, and this surface appears to form the outer zone of the sand transport corridor (PWA, 2010). Approximately 901 acres of the project site is located within Zone III.

Zone IV. In the southern and western extent of the project site, the surface is a mixture of deflated vegetated dunes with thin coarse sand and patches of alluvial gravel and desert varnish with little available fine loose sand for transport to dunes downwind (BLM, 2011). Zone IV represents an area where hydrological (alluvial and fluvial) erosion is more prominent than wind transport for sand (Kenney, 2010). PWA (2010) described Zone IV as the mid-alluvial fan with degraded vegetated dunes and coarse alluvial surfaces. PWA (2010) noted that patches of vegetated, deflated sand dunes occurred within this zone and sand was being removed by wind, but not replaced. Fine, loose sand was not readily present within this zone. Approximately 2,779 acres of the project site is located within Zone IV.

3.17.2.4 Vegetation Communities

The project site consists almost entirely of four natural vegetation communities (see Figure 3.17-2 Vegetation Communities, in Appendix A and Table 3.17-2). Vegetation communities were classified according to Holland (1986) and then cross-referenced with Sawyer et al. (2009) and the National Vegetation Classification System (NVCS) used in the DRECP Final EIS (BLM, 2015).

Two communities (desert dry wash woodland and unvegetated ephemeral wash) within the project site are considered sensitive due to their association with alluvial processes and State water jurisdiction. One additional community (stabilized and partially stabilized desert dunes) within the project site is considered sensitive due to its association with aeolian processes.

Three additional natural vegetation communities or land cover types occur outside the project site, but within the BRSA: active desert dunes, alkali (desert) sink scrub, and dry lake bed (Figure 3.17-2, Vegetation Communities). Other sensitive groundwater-dependent vegetation communities described under PSPP (BLM, 2011; CEC, 2010) include honey mesquite woodlands, alkali (desert) sink scrubs, sparsely vegetated playa lake beds, and jackass clover unique stands. These vegetation types do not occur within the project site, but are potentially vulnerable to water table drawdowns caused by groundwater pumping and are discussed in further detail below.

Table 3.17-2. Vegetation Communities and Cover Types (acres)

Vegetation Community or Cover type	Project Site[1]	Biological Resources Study Area (BRSA)[2]
Sonoran creosote bush scrub	2,561	10,845
Desert dry wash woodland*	211	846
Stabilized and partially stabilized desert dunes*	147	910
Unvegetated ephemeral dry wash*	593	225
Active desert dunes	0	684
Desert sink scrub	0	9
Dry lake bed	0	270
Agriculture	6	833
Developed	1	149
Totals	3,522	14,771

1 - The project site includes the solar facility and 200-foot-wide gen-tie area.
2 - The BRSA includes the project site as defined in 2010 and buffer areas (1 mile for solar facility and 1,000 feet on either side of the gen-tie line).
*Sensitive community
Source: Ironwood (2017) and CEC (2010) (acreages are rounded).

Sonoran Creosote Bush Scrub

Sonoran creosote bush scrub vegetation characterizes most of the project site and intergrades with desert dry wash woodland along desert washes. This community is synonymous with *Larrea tridentata–Ambrosia dumosa* alliance (Sawyer et al., 2009) and *Lower Bajada and Fan Mojavean-Sonoran Desert Scrub* (NVCS). It is not designated as a sensitive plant community by BLM (NECO Plan) and has a State Rarity rank of S5, meaning that it is commonly found throughout its historic range. The California Natural Diversity Database (CNDDB; CDFW, 2016a) recognizes many rare associations of creosote bush scrub; however, none of these were found in the project site (CEC, 2010).

Sonoran creosote bush scrub occurs on well-drained, secondary soils of slopes, fans, and valleys and is the basic creosote bush scrub habitat of the Colorado Desert (Holland, 1986). Within the project site, this community is characterized by sandy soils with a shallow clay pan. Areas of desert pavement occur in this habitat where there is a lower density of vegetation, with cobbles ranging in size from 1 to 3 inches (CEC, 2010). Dominant plants within this community are creosote bush (*Larrea tridentata*) and white bur-sage (*Ambrosia dumosa*). Other occasional components include indigo bush (*Psorothamnus* spp.), white rhatany (*Krameria bicolor*), Anderson's desert thorn (*Lycium andersonii*), saltbush (*Atriplex* spp.), and a rich annual flora. There is a substantial presence of invasive plant species within the creosote bush scrub community, consisting primarily of Sahara mustard (*Brassica tournefortii*), Mediterranean grass (*Schismus* spp.), and Russian thistle (*Salsola spp.*). The I-10 and associated diversion dikes may contribute to the overall sparse vegetation cover and low diversity of creosote bush scrub due to alteration of historical alluvial flows (BLM, 2011).

Sonoran creosote bush scrub provides habitat for special status wildlife species, including desert tortoise (*Gopherus agassizii*) and desert kit fox (*Vulpes macrotis arsipus*); see Section 3.21 of this Supplemental EIS/EIR (Wildlife Resources).

Desert Dry Wash Woodland

Desert dry wash woodland is a sensitive vegetation community recognized as rare by the CNDDB and the BLM (NECO Plan) and DRECP (BLM, 2015) under varying nomenclature. This community is synonymous with *Parkinsonia florida – Olneya tesota* (microphyll) woodland alliance (Sawyer et al., 2009) and *Sonoran-Coloradan Semi Desert Wash Woodland / Scrub* (NVCS). The DRECP identifies the Sonoran-Coloradan Semi-Desert Wash Woodland/Scrub as a riparian vegetation type, subject certain Conservation Management Actions (CMAs). As described in supporting documentation for PSPP (BLM, 2011; CEC, 2010), CDFW includes desert dry wash woodland habitat on the site within its jurisdiction as State waters (generally interpreted to include channel bed and banks, as well as adjacent riparian habitat). Holland (1986) describes this community as an open to relatively densely covered, drought-deciduous, microphyll (small compound leaves) riparian scrub woodland. These habitats often are supported by braided wash channels that change patterns and flow directions following major surface flows (CEC, 2010).

Desert dry wash woodland is dominated by an open tree layer of ironwood (*Olneya tesota*), with occasional blue palo verde (*Parkinsonia florida*), and smoke tree (*Psorothamnus spinosus*). The understory is a modified creosote scrub with big galleta grass (*Hilaria rigida*), cheesebush (*Ambrosia salsola*), desert lavender (*Hyptis emoryii*), and occasional Russian thistle (CEC, 2010). Ironwood, palo verde, and smoke tree are desert phreatophytes (deep-rooted plants that obtain water from a permanent ground supply or from the water table). Desert dry wash woodland provides habitat for common and special status wildlife species.

Within the project site, desert dry wash woodland is found along the three primary wash systems that are channelized under the I-10. The washes are well defined at the southwestern margin of the project site, and become less defined within the flat topography where they spread out into numerous small channels within the relatively flat topography to the north. Desert dry wash woodland is replaced in these smaller channels and flats by mixed creosote bush and big galleta grass, and a mixture of other upland and wash-dependent plant species. Outside the three major wash systems, desert dry wash woodland appears to be declining, evidenced by a relative decrease in the cover, vigor, diversity, and overall habitat function, possibly due to hydrological alterations associated with the I-10 freeway that likely resulted in reduced water supply to the broad network of channels that once crossed the project site (CEC, 2010).

Stabilized and Partially Stabilized Desert Dunes

Stabilized and partially stabilized desert dunes are considered sensitive by the State of California, and are classified as S3 (restricted range, rare) in the CNDDB, and listed as rare by the BLM (in the NECO Plan) and the DRECP Final EIS (BLM, 2015). This community is synonymous with *Dicoria canescens–Abronia villosa* Desert Dunes alliance (Sawyer et al., 2009) and *North American Warm Desert Dunes and Sand Flats* (NVCS).

These dune systems consist of sand accumulations that have stabilized or partially stabilized as shrubs and scattered grasses have colonized. It occurs at the margins of Palen Dry Lake and extends as a few discrete patches within the northern and eastern portion of the project site (see Sand Transport System, above). Dominant plants within this community include creosote bush, big galleta grass, desert twinbugs (*Dicoria canescens*), desert sand verbena (*Abronia villosa*), and dyebush (*Psorothamnus emoryi*). Desert sand dunes provide unique habitats that often support both special

status and common plants, as well as mammals, reptiles and insects that are restricted to sand dunes. Note that the "stabilized and partially stabilized desert dunes" shown on Figure 3.17-2 represent the plant community. These areas are located within the sand transport system described in Section 3.17.2.3 but they do not correspond to any of the sand transport zones mapped in Figure 3.14 2 (Sand Transport, in Appendix A) and described in those sections. Habitat suitability for special-status plants and animals corresponds more closely to the sand transport zones than to the vegetation type described here.

Unvegetated Ephemeral Dry Wash

In the project site, the smaller channels without desert dry wash woodland support a sparse to intermittent cover of shrubs and perennial herbs. These habitats also are recognized as waters of the State. These smaller channels are subject to frequent channel avulsion and highly variable flow pathways within broad active alluvial fans. Vegetation cover consists largely of mixed upland and wash-dependent perennial herbs in a community of creosote bush and big galleta grass along the banks and within the interfluves (areas between adjacent watercourses). Like desert dry wash woodland habitats, unvegetated ephemeral dry washes showed evidence of wildlife use by small and large mammals as movement corridors; they also provide a food and water source for many species of reptiles, and migrating songbirds and raptors (CEC, 2010).

Agriculture

Agricultural land is not described by Holland (1986) or Sawyer et al. (2009). Active and fallow agricultural fields are located within the buffer of the project site, within the biological survey area, but not within the project disturbance area. The majority of the lands mapped as agriculture consist of date palm plantations located northwest of the proposed solar facility and south of the gen-tie alignment. A portion of the mapped agricultural land consisted of fallow fields where ruderal vegetation has recolonized with exotic plant species interspersed with sparse native vegetation. Fallow and active agriculture fields may provide forage and cover for local and migratory wildlife, especially in areas that are actively irrigated (CEC, 2010).

Developed Areas

Developed areas consist of existing roads, including Interstate 10, Corn Springs Road, and unnamed dirt roads.

3.17.2.5 Sensitive Natural Communities

Sensitive natural communities support unique or biologically important plant or wildlife species, or perform important ecological functions (e.g., bank stabilization or water filtration). These communities usually are scarce locally and regionally and therefore vulnerable to extirpation. Sensitive natural communities in the desert region include many wash-dependent communities, dune and playa habitats, and groundwater-dependent plant communities (such as those discussed below), waters of the State, wetland and riparian habitats, and others that are of particular concern to BLM, CDFW, and other federal, state, and local agencies.

The CNDDB maintains a list of all currently recognized and documented natural communities and notes the communities that are considered rare (relative to widespread and common plant

communities such as Sonoran creosote bush scrub) and have a CNDDB State-rank (S rank) of 3 or lower, meaning they are found over less than 10,000 to 50,000 acres or are represented by fewer than 21 to 100 occurrences (CDFG, 2010). These communities may be rare due to a naturally restricted range (e.g., wash-dependent or riparian communities are restricted to narrow stringers of habitat), widespread declines, or other factors.

The following sensitive natural communities occur within and adjacent to the project site and are described above:

- Desert dry wash woodland
- Stabilized and partially stabilized dunes
- Unvegetated ephemeral wash

Three additional sensitive natural communities are not found within the project site, but occur near it within the BRSA and are described below:

- Alkali (desert) sink scrub
- Active desert dune
- Dry lake bed (playa)

Other sensitive groundwater-dependent vegetation communities described under PSPP (BLM, 2011; CEC, 2010) include honey mesquite woodlands and microphyll woodlands. These vegetation types do not occur within the project site, but may be vulnerable to project-related effects (water table drawdowns caused by groundwater pumping). Honey mesquite woodlands and microphyll woodlands are described below.

Alkali (Desert) Sink Scrub

Low scrubby shrubland dominated by bush seep-weed (*Suaeda nigra [moquinii]*) occurs at Palen Dry Lake where it forms pure stands over large areas around the margins of the lakebed. This vegetation may be described as "alkali sink scrub" or "succulent chenopod scrub." Alkali sink scrub communities often occur on the margins of dry lake beds in the Colorado, Sonoran, Mojave, and Great Basin deserts typically below 4,000 feet in elevation. It is characteristic of alkali sinks in the project vicinity. Bush seep-weed is a low-growing, grayish, succulent occupying fine-textured, often poorly drained, saline-alkaline soils on or around the playa margins. It is a "facultative" wetland plant, meaning that it can occur in wetlands or non-wetlands; however, it is also a deep-rooted phreatophyte, rooting at depths of several meters to access groundwater (CEC, 2010).

Bush seep-weed-dominant chenopod scrubs occur north of the project site in the northeast portion of the BRSA and around Palen Dry Lake, predominantly in sand drifts over the playa surface. This vegetation community was not mapped during the most recent surveys (Ironwood, 2016). Chenopod scrub provides habitat value to many species of common and special status plants and wildlife as dispersal, foraging and cover habitats, especially in association with other upland and desert wash communities.

Active Desert Dunes

Active desert dunes are considered sensitive by CDFW (CDFG, 2010) and the BLM (NECO Plan). This community is characterized by mostly unvegetated drifted sand dunes and sand fields of 5 feet or less in height. Dominant and indicator plants within the BRSA for this community include

desert twinbugs, creosote bush, birdcage evening primrose (*Oenothera deltoides*), and Russian thistle. The active desert dunes are in the northeastern portion of the BRSA and northeast of Palen Dry Lake.

As described under the Sand Transport System section (above), active aeolian sand migration occurs along the northeastern boundary of the project site. This area has hummocky vegetated dunes. Active dunes (Zone I) are found outside the project site to the northeast; no active desert dune acreage occurs within the project site. Despite the presence of Russian thistle the active desert dunes are an important habitat for dune-endemic species of special status plants and wildlife.

Dry Lake Bed (Playa)

There is no Holland (1986) or Sawyer et al. (2009) classification for this community. Palen Dry Lake lies outside of the project site, in the northeastern portion of the BRSA. This dry lake bed is made up of clay and silt. It has a soft surface when wet and displays desiccation cracks once the surface dries. Dry lake beds are prone to periodic flooding with a high coefficient for swelling and contracting once dried. Palen Dry Lake is characterized as a "wet playa" because it supports significant groundwater discharge at the ground surface by evaporation (CEC, 2010). Palen Dry Lake bed has no natural or artificial outlet (CEC, 2010: Soil and Water Appendix A). The alkali playa community is ranked as S3.2 (threatened) by the CNDDB.

3.17.2.6 Groundwater-dependent Vegetation Communities

In the Chuckwalla Valley Groundwater Basin, the groundwater is too deep to support surface vegetation other than communities of deeper-rooted, groundwater-dependent phreatophytes. Some desert phreatophytes are able to tap into groundwater up to 40 to 200 feet or deeper, depending on the species. The distinction between phreatophytes depending on groundwater, as opposed to surface water or soil moisture, is complicated where groundwater levels are deep. Groundwater elevation contour mapping suggests that groundwater levels are very close to the surface in the northwestern 25 percent of Palen Dry Lake, but drop to more than 100 feet below surface at Ford Dry Lake. Groundwater levels are even deeper in other portions of the valley. The levels around Palen Lake are within the known rooting depths for phreatophyte communities including: mesquite woodlands, alkali sink scrublands (dune communities along the margins of the playa, and ironwood-palo verde woodlands (CEC, 2010). Documented communities around Palen Dry Lake also were confirmed through aerial photo interpretation and other methods.

The groundwater-dependent plant communities located outside the project site near Palen Dry Lake may be vulnerable to water table drawdowns caused by groundwater pumping. The following groundwater-dependent plant communities are sensitive communities recognized by the CNDDB or BLM.

- Honey mesquite woodlands (mostly small groves also called "bosques");
- Microphyll woodlands (ironwood and palo verde desert dry wash woodlands), included within the description of desert dry wash woodland, above; and
- Alkali (desert) sink scrubs (dominated or co-dominated by bush seep-weed or other species, described above).

Honey Mesquite Bosques

Shrubby "bosques" (groves) of honey mesquite occur around the unvegetated playa along the northwest and southwest margins of Palen Dry Lake on small coppice dunes, and elsewhere in Chuckwalla Valley. Mesquite bosques are a rare and sensitive community recognized by BLM and the CNDDB. They occur in areas with access to permanent and stable groundwater. Like other desert phreatophytes, mesquite is known for its deep rooting. Mesquite typically roots to depths of 40 feet, but has been documented to root as deep as 150 feet to over 250 feet in one example at a mine shaft. Mesquite can also persist on sites that have little or no groundwater by growing lengthy shallow lateral roots. These adaptations allow honey mesquite to access moisture year-round and retain most leaves in all but the most severe droughts (CEC, 2010).

The fruit of honey mesquite is valuable forage for wildlife; it is quite predictable, even in drought years, annually providing an abundant and nutritious food source for numerous wildlife species upon ripening in summer (CEC, 2010). Where they occur, honey mesquite seeds form an important part of the diet of mice, kangaroo rats, ground squirrels, quail, black-tailed jackrabbit, mule deer, and many other wildlife. Mesquite flowers are eaten by numerous bird species and are an important nectar source for neotropical migrant birds in their spring passage across California deserts. Quail and many other birds eat mesquite buds and flowers in the spring and seeds during the fall and winter. Western honey mesquite communities often attract large numbers of birds that feed on the fruit of parasitic mistletoe that grows on the mesquite.

3.17.2.7 Special Status Plants

Special status species are those that have been afforded special recognition by federal, State, or local resource agencies or organizations, are often of relatively limited distribution, and typically require unique habitat conditions, which also may be in decline. Special status criteria include:

- Listed, or candidate for listing, by State or federal agencies as endangered, threatened, or rare;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA);
- BLM Sensitive species;
- Taxa listed in the CNPS Inventory of Rare and Endangered Plants of California;
- Protected under other statutes or regulations (e.g., Native Plant Protection Act, etc.); and
- Considered a locally significant species, that is, a species that is not rare from a state-wide perspective but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances.

The BLM designates Sensitive Species as those requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under FESA. BLM Sensitive Species also include all Federal Candidate and Federally Delisted species, which were so designated within the last 5 years, and California Rare Plant Rank (CRPR) List 1B species that occur on BLM lands.

Based on habitat requirements, geographic range, and elevational range, none of the plants included in the DRECP Focus Species list (Table III.7-33 in BLM, 2015) have a potential to occur on the project site.

Forty-four special status plant species were reviewed for their potential to occur within the project site and its vicinity based on regional plans and database records; these are listed in Table 3.17-3 (BLM, 2015). Special status species that were detected within or near the project site, or have moderate potential to occur based on the presence of suitable habitat within the project site, are described below. Species that were not found within or near the project site and were determined to have a low probability of occurrence due to the absence of suitable habitat, differences in elevation range, or significant distance from known geographic range are described in the Biological Resources Technical Report (Appendix B).

Floristic surveys conducted on the project site, buffers, and gen-tie route from 2009 through 2017 identified a total of 172 taxa. A cumulative list of plant species found during surveys performed for PSPP, PSEGS, and the Proposed Action is provided in the Biological Resources Technical Report Appendix B.

As shown in Table 3.17-3, five special status plant species were observed within the project site during surveys and are described below:

- Harwood's milk-vetch
- Ribbed cryptantha
- Spiny abrojo
- California ditaxis
- Harwood's eriastrum

Three additional species were observed in the vicinity, but outside the project site:

- Utah milkvine
- Salton saltbush (Palen Lake saltbush)

None of these seven species are listed as threatened or endangered, and only Harwood's eriastrum is managed by BLM as a sensitive species. Several additional species have a moderate potential to occur on the project site based on the presence of suitable habitat and known occurrences in the region. The special status plants found on or near the project site are described below, followed by a discussion of species that are considered to have a moderate potential for occurrence.

Harwood's Milk-vetch

Harwood's milk-vetch (*Astragalus insularis* var. *harwoodii*) has a CRPR of 2B.2 and is a covered species under the NECO Plan. It has a NatureServe rank of G5T3/S2, meaning that it is rare in California, but more common elsewhere. It is an annual herb that mainly occurs in Sonoran desert scrub habitat throughout the Colorado Desert (BLM CDD, 2002). It is found in desert dunes, sandy or gravelly areas, and ruderal swales throughout the Mojave and Sonoran deserts that cover portions of Imperial, Riverside, and San Diego Counties (CNPS, 2016). Harwood's milk-vetch has also been reported from Baja California, Sonora Mexico, and portions of Yuma County, Arizona. There are several CNDDB records for this species within the project vicinity (CDFW,

Table 3.17-3. Plant Species with Potential to Occur within the Project Site

Common Name	Scientific Name	Conservation Status State / Fed / CRPR / BLM / Global Rank / State Rank	Blooming Period	Potential to Occur on the Project Site
Chaparral sand verbena	*Abronia villosa var. aurita*	__/__/1B.1/BLM Sensitive/G5T2T3/S2	Jan-Sep	Low. Not observed. Suitable habitat present and nearby observations, but only the more common *A.v. villosa* was observed on the project site.
Angel trumpets	*Acleisanthes longiflora*	__/__/2B.3/__/G5/S1	May	Low. Not observed. No suitable soils.
Desert sand parsley	*Ammoselinum giganteum*	__/__/2B.1/__/G2G3/SH	Mar-Apr	Low. Not observed. No suitable habitat, not observed since 1928.
Small-flowered androstephium	*Androstephium breviflorum*	__/__/2B.2/__/G4/S2	Mar-Apr	Low. Not observed. Suitable habitat, but outside of range.
Harwood's milk-vetch	*Astragalus insularis var. harwoodii*	__/__/2B.2/__/G5T3/S2	Jan-May	**Present.** Recorded within proposed solar facility footprint.
Coachella Valley milk-vetch	*Astragalus lentiginosus var. coachellae*	__/FE/1B.2/BLM Sensitive/G5T1/S1	Feb-May	Low. Not observed. Restricted to the Coachella Valley; recorded occurrences in the project vicinity are believed to be in error.
California ayenia	*Ayenia compacta*	__/__/2B.3/__/G4/S3	Mar-Apr	Low. Not observed. Marginally suitable habitat present, but no records from project vicinity.
Pink fairy duster	*Calliandra eriophylla*	__/__/2B.3/__/G5/S3	Jan-Mar	Low. Not observed. Marginally suitable habitat, no records in project vicinity since 1960.
Sand evening-primrose	*Camissonia arenaria*	__/__/2B.2/__/G4?/S2S3	Nov-May	Low. Not observed. Suitable habitat present, but no records from the Chuckwalla Valley.
Crucifixion thorn	*Castela emoryi*	__/__/2B.2/__/G3G4/S2S3	Apr-Oct	Low. Not observed. Suitable habitat present, but plant is obvious and likely to be detected if present.
Las Animas colubrina	*Colubrina californica*	__/__/2B.3/__/G4/S2S3	Apr-Jun	Low. Not observed. No suitable habitat.
Spiny abrojo	*Condalia globosa var. pubescens*	__/__/4.2/__/G5T4/S3	Mar-Nov	**Present**. Recorded within the southwestern terminus of the gen-tie

Table 3.17-3. Plant Species with Potential to Occur within the Project Site

Common Name	Scientific Name	Conservation Status State / Fed / CRPR / BLM / Global Rank / State Rank	Blooming Period	Potential to Occur on the Project Site
Foxtail cactus	*Coryphantha alversonii*	__/__/4.3/__/G3/S3	Apr-Jun	Low. Not observed. No suitable habitat, plant is obvious and likely to be detected if present.
Ribbed cryptantha	*Cryptantha costata*	__/__/4.3/__/G4G5/S3.3	Feb-May	**Present.** Recorded in northern and eastern portions of proposed solar facility footprint.
Winged cryptantha	*Cryptantha holoptera*	__/__/4.3/__/G4G5/S4	Mar-Apr	Low. Not observed. Suitable habitat present, but no records in project vicinity.
Wiggins' cholla	*Cylindropuntia wigginsii* [[*Opuntia wigginsii*]	__/__/3.3/__/G3?Q/S1?	Mar	Low. Not observed. Probably does not deserve recognition as a distinct taxon.
Glandular ditaxis	*Ditaxis claryana*	__/__/2B.2/__/G3G4/S2	Oct-Mar	Moderate. Not observed.
California ditaxis	*Ditaxis serrata var. californica*	__/__/3.2/__/G5T3T4/S2?	Mar-Dec	**Present.** Recorded along western extent of gen-tie.
Harwood's eriastrum	*Eriastrum harwoodii*	__/__/1B.2/BLM Sensitive_/G2/S2	Mar-Jun	**Present.** Recorded within eastern edge of proposed solar facility footprint.
Abram's spurge	*Euphorbia abramsiana*	__/__/2B.2/__/G4/S2	Aug-Nov	Moderate. Not observed.
Arizona spurge	*Euphorbia arizonica*	__/__/2B.3/__/G5/S3	Mar-Apr	Low. Not observed. Suitable habitat present, but no records from project vicinity.
Flat-seeded spurge	*Euphorbia platysperma*	__/__/1B.2/ BLM Sensitive / G3/S1	Feb-Sep	Low. Not observed. Suitable habitat present, but no records from project vicinity.
Utah milkvine	*Funastrum utahense* [*Cynanchum utahense*]	__/__/4.2/__/G4/S4	Mar-Oct	Moderate. Recorded offsite.
Pink velvet mallow	*Horsfordia alata*	__/__/4.3/__/G5/S4	Feb-Dec	Low. Not observed. No suitable habitat, no records from project vicinity.
Bitter hymenoxys	*Hymenoxys odorata*	__/__/2B.1/__/G5/S2	Feb-Nov	Low. Not observed. Potentially suitable habitat present, but no records from project vicinity.

Table 3.17-3. Plant Species with Potential to Occur within the Project Site

Common Name	Scientific Name	Conservation Status State / Fed / CRPR / BLM / Global Rank / State Rank	Blooming Period	Potential to Occur on the Project Site
California satintail	*Imperata brevifolia*	__/__/2B.1__/G3/S3	Sep-May	Low. Not observed. No suitable habitat.
Spearleaf	*Matelea parvifolia*	__/__/2B.3/__/G5?/S3	Mar-May	Low. Not observed. No suitable habitat, below elevational range.
Argus (Darlington's) blazing star	*Mentzelia puberula*	__/__/2B.2/__/G5/S2	Mar-May	Low. Not observed. No suitable soils, below elevational range.
Slender cotton-heads	*Nemacaulis denudata var. gracilis*	__/__/2B.2/__/G3G4T3?/S2	Mar-May	Low. Not observed. Marginally suitable habitat, no records from the Chuckwalla Valley.
Lobed ground cherry	*Physalis lobata*	__/__/2.B3/__/G5/S1S2	May-Jan	Low. Not observed.
Desert portulaca	*Portulaca halimoides*	__/__/4.2/__/G5/S3	Sep	Low. Not observed. No suitable habitat, below elevational range.
Desert unicorn plant	*Proboscidea althaeifolia*	__/__/4.3/__/G5/S4	May-Oct	High. Not observed
Orocopia sage	*Salvia greatae*	__/__/1B.3/BLM Sensitive/G2G3/S2S3	Mar-Apr	Low. Not observed. Restricted to areas south of the Chuckwalla Mountains.
Desert spikemoss	*Selaginella eremophila*	__/__/2B.2/__/G4/S2S3	May-Jul	Low. Not observed. No suitable habitat, below elevational range.
Cove's cassia	*Senna covesii*	__/__/2B.2/__/G5/S3	Mar-Aug	Low. Not observed. Below elevational range.
Mesquite nest straw	*Stylocline sonorensis*	__/__/2A/__/G3G5/SX	Apr	Low. Not observed. Not observed since 1930.
Dwarf germander	*Teucrium cubense ssp. depressum*	__/__/2B.2/__/G4G5T3T4/S2	Mar-Nov	Low. Not observed. Marginally suitable habitat, no records in project vicinity.
Jackass clover	*Wislizenia refracta ssp. refracta*	__/__/2B.2/__/G5T5?/S1	Apr-Nov	Moderate. Not observed.
Palmer's jackass clover	*Wislizenia refracta ssp. palmeri*	__/__/2B.2/__/G5T2T4/S1	Jan-Dec	Moderate. Not observed.
Salton saltbush (Palen Lake saltbush)*	*Atriplex sp. nov. J. Andre* [*Atriplex canescens ssp.*]	__/_/_/BLM Sensitive_/_/	May-Jun	Low. Recorded offsite.

Notes for Table 3.17-3

Source: Ironwood, 2017.

Blanks "__" indicate that there is no applicable conservation status.

Proposed new taxon (Andre, pers. comm.). BLM may consider proposed new taxa as BLM Sensitive (CEC, 2010)

Federal

FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range
FT = Federally listed, threatened: species likely to become endangered within the foreseeable future

California Rare Plant Rank (CRPR)

CRPR 1A = Presumed extinct
CRPR 1B = Rare, threatened, or endangered in California and elsewhere
CRPR 2 = Rare, threatened, or endangered in California but more common elsewhere
CRPR 3 = Plants which need more information
CRPR 4 = Limited distribution – a watch list
CBR = Considered But Rejected
.1 = Seriously endangered in California (high degree/immediacy of threat; over 80% of occurrences threatened)
.2 = Fairly endangered in California (moderate degree/immediacy of threat; 20%-80% of occurrences threatened)
.3 = Not very endangered in California (low degree/immediacy of threats or no current threats known; <20% of occurrences threatened or no current threats known)

Bureau of Land Management

BLM Sensitive = BLM Manual §6840 defines sensitive species as"...those species that are (1) under status review by the FWS/NMFS; or (2) whose numbers are declining so rapidly that Federal listing may become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats (BLM, 2008).

Global Rank/State Rank

Global rank (G-rank) is a reflection of the overall condition of an element throughout its global range. Subspecies are denoted by a T-Rank; multiple rankings indicate a range of values

G1 = Critically Imperiled.
G2 = Imperiled.
G3 = Vulnerable.
G4 = Apparently secure. This rank is clearly lower than G3 but factors exist to cause some concern; i.e., there is some threat, or somewhat narrow habitat.
G5 = Secure. Population or stand demonstrably secure to ineradicable due to being commonly found in the world.

State rank (S-rank) is assigned much the same way as the global rank, except state ranks in California often also contain a threat designation attached to the S-rank. An H-rank indicates that all sites are historical.

SX = Presumed Extirpated
SH = Possibly Extirpated
S1 = Critically Imperiled
S2 = Imperiled
S3 = Vulnerable
.1 = undefined in new classification system; under old system, this meant very threatened in California
.2 = undefined in new classification system; under old system, this meant threatened in California
.3 = undefined in new classification system; under old system, this meant no current threats known in California

2016). Many new occurrences were documented in Chuckwalla Valley and the Palo Verde mesa during surveys for the Blythe Solar Power Project, the Genesis Solar Energy Project, and the McCoy Solar Energy Project (Tetra Tech, 2011). The Consortium of California Herbaria (CCH) lists 103 occurrences within California (CCH, 2016).

During the 2009 and 2010 surveys for PSPP, 146 Harwood's milk-vetch plants were documented in the PSPP survey area; most were located outside the project site and seven occurred within the project site (see Figure 3.17-3, Special Status Plant Observations 2009-2010, in Appendix A). Harwood's milk-vetch was not observed during the March 2013 survey of the PSEGS proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013). It was not observed during surveys performed in May 2016 (no *Astragalus* species were recorded at that time), probably because of the lack of rainfall and late survey timing. It was observed again in the 2017 surveys: a total of nine individual plants within the Project site and along the gen-tie (Figure 3.17-4, Special Status Plant Observations 2017). The intermittent occurrence of living plants indicates a viable seedbank is likely to persist near areas of documented occurrences and Harwood's milk-vetch it is presumed present on site, in the general localities and quantities previously recorded, even in years when it is not seen above-ground.

Ribbed Cryptantha

Ribbed cryptantha (*Cryptantha costata*) has a CRPR of 4.3 and a NatureServe rank of G4G5/S3.3, meaning that it has a limited distribution, but it is not currently threatened in California. It typically occurs in loose friable soils, especially sand, in the eastern Mojave and Sonoran deserts in Imperial, Riverside, San Diego, and San Bernardino Counties and into Arizona and south to Baja California, Mexico (CNPS, 2016). It commonly occurs in sandy habitats, including stabilized and partially stabilized desert dunes and sandy areas of Sonoran and Mojave desert creosote bush scrub. There are 258 records from several locations throughout Riverside, San Diego, and Imperial Counties (CCH, 2016). A large local population of ribbed cryptantha was identified during the 2010 surveys for PSPP and ancillary surveys for other nearby projects (Tetra Tech, 2011).

Ribbed cryptantha was found within the PSPP disturbance area in 2010. Density estimates were calculated using sub-sampling methods resulting in an estimate of about 8,900 plants per acre (BLM, 2011). The proposed Palen Solar Project will avoid many of the previously recorded populations that were found to the east of the proposed boundary (Figure 3.17-3, Special Status Plant Observations 2009-2010). Ribbed cryptantha was not observed during a March 2013 survey of the PSEGS's proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013). It was not observed on the project site during surveys performed in May 2016, although approximately 320 dried "skeletons" of ribbed cryptantha were identified approximately 4,900 feet east of the project site during reference site visits in April 2016. It was not observed in the 2016 surveys probably because of the lack of rainfall and late survey timing. It was observed in Spring 2017 in the eastern part of the study area, within sand transport zone II, in densities similar to earlier reports (Figure 3.17-4, Special Status Plant Observations 2017). The intermittent occurrence of living plants indicates a viable seedbank is likely to persist near areas of documented occurrences and ribbed cryptantha is presumed present on site, in the general localities and numbers previously recorded, even in years when it is not seen above-ground.

California Ditaxis

California ditaxis (*Ditaxis serrata* var. *californica*) has a CRPR of 3.2 and a NatureServe rank of "G5T3T4/S2?," which indicates that the occurrences in California are probably fairly endangered but more information is needed. California ditaxis is closely related to the common *Ditaxis neomexicana* (CEC, 2010), and identification is often difficult, so that *D. neomexicana* is often misidentified as *D. serrata* var. *californica*. It occupies Sonoran desert scrub habitat, and prefers sandy washes and alluvial fans of the foothills and lower desert slopes, from 100 to 3,000 feet elevation. Reports are known from San Bernardino, Riverside, Imperial, and San Diego Counties, and Sonora, Mexico (CNPS, 2016). There are 40 records of this species in California, primarily from Riverside County (CCH, 2016).

The PSPP PA/FEIS (Section 3.18) stated that California ditaxis was present within the PSPP disturbance area. A total of 22 California ditaxis plants were reported in the survey area during the 2010 surveys: 11 observations were located within a tight cluster along the gen-tie line alignment (Figure 3.17-3, Special Status Plant Observations 2009-2010). California ditaxis was not observed during a March 2013 survey of the PSEGS proposed natural gas line extension, distribution yard, and gen-tie line reroute (Karl, 2013). It was not observed during surveys on the project site in 2016 or 2017; however, the common *D. neomexicana* was observed occasionally across the project site and gen-tie, in flowering and fruiting condition. It is notable that several California ditaxis reference populations recorded in 2009 and 2010 along the gen-tie were revisited in 2016, and none of them keyed clearly to *D. serrata* var. *californica*, but keyed instead to *D. neomexicana*. Assuming that perennial plants and a viable seedbank of California ditaxis persists near previously documented records in 2010, then this species is considered to be present on the gen-tie consistent with the quantities previously recorded. However, it appears likely that the onsite reports may have been mistaken identifications of the more common species.

Utah Milkvine

Utah milkvine (*Funastrum utahense* [*Cynanchum utahense*]) has a CRPR of 4.2 and a NatureServe rank of G4/S4, meaning that it apparently secure in California and elsewhere. It occurs in San Diego, Imperial, Riverside, and San Bernardino Counties and portions of Arizona, Nevada, and Utah (CNPS, 2016). Utah milkvine is a twining perennial found in sandy or gravelly soils in Mojavean and Sonoran desert scrub habitats or washes from approximately 500 feet to 4,300 feet in elevation (CNPS, 2016). It was documented on the Palo Verde Mesa (CEC, 2010). There are 140 records in the Consortium of California Herbaria database primarily from San Bernardino and San Diego Counties; there is one record from the Big Maria Mountains from wash and stabilized dune habitat at approximately 1,200 feet elevation (CCH, 2016).

The PSPP PA/FEIS (Section 3.18; BLM, 2011) stated that Utah milkvine was not recorded within the PSPP disturbance area. It was not found on the project site during 2009 field surveys; however, it was observed incidentally at a single location east of Palen Lake and approximately 1.5 miles east of the project site (Figure 3.17-3, Special Status Plant Observations 2009-2010). Utah milkvine was not observed within the project site or buffer area during 2009 or 2010 field surveys (CEC, 2010), March 2013 surveys of the PSEGS linear features (Karl, 2013), or during 2016 or 2017 surveys of the project site. Due the presence of potentially suitable habitat within the project site, Utah milkvine has a moderate potential to occur.

Harwood's Eriastrum

Harwood's eriastrum (*Eriastrum harwoodii*), also commonly known as Harwood's phlox or Harwood's woollystar, is a BLM Sensitive species. It has a CRPR of 1B.2 and a NatureServe rank of G2/S2, which indicates it is rare, threatened or endangered throughout its range. It is a spring annual, typically found in dunes around the margins of dry lakes such as Dale, Cadiz, and Soda lakes (CNPS, 2016). Reports of this species are known from San Bernardino, Riverside, Imperial, and San Diego Counties, and Sonora, Mexico (CNPS, 2016). There are 98 records in California (CCH, 2016).

Sandy habitats, including but not limited to stabilized and partially stabilized dunes within the project site are suitable habitat for this species; however, it was not observed during 2009 field surveys (CEC, 2010). During spring 2010 field surveys, over 150 Harwood's eriastrum plants were observed in the partially stabilized dunes outside the project site (approximately 0.5 to 1.5 miles to the east) (Figure 3.17-3, Special Status Plant Observations 2009-2010), but no Harwood's eriastrum were found within the project site (CEC, 2010). Harwood's eriastrum was not observed during a March 2013 survey of the PSEGS's proposed linear modifications (Karl, 2013). It was not observed in the 2016 surveys, possibly due to low rainfall and late survey timing; however, the results of 2009 and 2010 surveys remain valid. The reference site was revisited again in 2017 to confirm phenology prior to conducting formal surveys. During the 2017 surveys, 46 Harwood's eriastrum locations, consisting of approximately 940 plants. The extent of occupied habitat was estimated as xx acres by digitizing a 250-foot buffer area surrounding each occurrence point (see Figure 3.17-4). There are 87.1 acres of occupied Harwood's eriastrum habitat within the ROW boundary, primarily within san transport Zone II (Figure 3.17-4, Special Status Plant Observations 2017, in Appendix A). Sixteen additional observations consisting of approximately 867 Harwood's eriastrum were recorded incidentally within Sand Transport Zone I and II outside of the Project area during the 2017 surveys. Additional suitable habitat for Harwood's eriastrum is found within the un-surveyed portions of Zones I and II outside the Project, where it is likely to occur in similar densities. The intermittent occurrence of living plants indicates a viable seedbank is likely to persist near areas of documented occurrences and Harwood's eriastrum is presumed present on site and off site, in the general localities and numbers previously recorded, even in years when it is not seen above-ground.

Salton Saltbush (Palen Lake Saltbush)

Salton saltbush or Palen Lake saltbush (apparently *Atriplex canescens* var. *macilenta*, although the formal nomenclature is uncertain), was documented on the saline lake margin in 2010, approximately 2,130 feet north of the project site. As of 2010, the species did not match descriptions of any saltbush species in The Jepson Manual (2003 edition), which did not include *A. canescens* var. *macilenta.* A new edition, published in 2012, includes *A. canescens* var. *macilenta* and the plants appear to be this species. The location was reconfirmed during the 2016 field surveys. The California Consortium of Herbaria lists 20 occurrences of *A. canescens* var. *macilenta* in southern California (CCH, 2016). Three occurrences are in Chuckwalla Valley, including one that was collected on Palen Dry Lake in 2010. As of April 2017, Salton saltbush has no official status or recognition; however, the BLM State Botanist has indicated that any undescribed taxa should be treated as BLM Sensitive Species (CEC, 2010), and thus it is included here as a special status species.

The PSPP PA/FEIS (Section 3.18; BLM, 2011) stated that the saltbush (unknown at the time, and referred to as "*Atriplex* sp. nov.") was not recorded within the PSPP disturbance area. Several of the plants were found within in the buffer area, northeast of the project site during spring 2010 field surveys (CEC, 2010). None were found within the project site or gen-tie during the surveys conducted from 2009 through 2017, probably due to lack of appropriate dry lakeshore habitat; therefore, this species is not expected to occur within the project site.

Abram's Spurge

Abram's spurge (*Euphorbia abramsiana*) has a CRPR of 2B.2 and a NatureServe rank of G4/S2, meaning it is fairly rare in California, but more common elsewhere (CNPS, 2016). Abram's spurge is a late-season, ephemeral annual that responds to summer monsoonal rains, typically blooming from September through November following precipitation (greater than 0.10 inches), but dries quickly and cannot be detected during routine spring surveys (CEC, 2010). Typical habitat consists of silty swales and flats in creosote bush scrub habitat from approximately 600 to 2,700 feet above mean sea level. This summer annual occurs in halophytic (saline-alkaline) scrub flats, playas, and along inlets and floodplains of playas and seems to prefer the lower floodplain ecotone, but can also extend higher up in the floodplain drainages (CEC, 2010). There are 121 records in the Consortium of California Herbaria from San Bernardino County to Imperial and eastern San Diego Counties to Arizona, Nevada, Mexico, and Baja California (CCH, 2016).

A 2000 CNDDB record from a location near the project site, approximately 0.5 miles east of Ford Dry Lake on Gasline Road just south of I-10, is reported as a "substantial population" (CEC, 2010). The PSPP PA/FEIS (Section 3.18; BLM, 2011) stated that Abram's spurge was not recorded in the PSPP disturbance area. This species was not observed during 2009, 2010 (including late-season surveys), 2016, or 2017 field surveys. Suitable habitat is present and the potential for Abram's spurge to occur within the project site is moderate.

Spiny Abrojo

Spiny abrojo (*Condalia globosa* var. *pubescens*) has a CRPR rank of 4.2, a NatureServe rank of G5T4/S3, and is covered under NECO. It is considered fairly endangered in California, but is apparently secure because of larger established populations in Arizona and Mexico. It is a spiny deciduous shrub in the buckthorn family, known from gravelly soils in low elevations of Sonoran desert scrub. There are 24 CNDDB occurrence records in California, most of which are in the Chocolate Mountains and Chuckwalla Bench of Imperial and Riverside Counties. Scattered individuals have been documented elsewhere. The closest record to the project site is in the Corn Springs area south of I-10.

The PSPP PA/FEIS (Section 3.18; BLM, 2011) stated that spiny abrojo was not recorded in the PSPP disturbance area. Spiny abrojo was not found during the 2009 to 2016 surveys. During the 2017 surveys, one location of spiny abrojo, consisting of three individual plants, was recorded along the gen-tie route approximately 800 feet west of the Red Bluff Substation, south of the I-10. The southern terminus of the gen-tie is at a higher elevation than all other project components. Most of the project site is below the elevation where this species typically occurs. Marginally suitable habitat is present within the proposed solar facility site but the potential for spiny abrojo to occur there is low, given the repeated negative survey results.

Glandular Ditaxis

Glandular ditaxis (*Ditaxis claryana*) has a CRPR of 2B.2 and a NatureServe rank of G3G4/S2, meaning it is rare in California, but more common elsewhere. It grows from sea level to approximately 1,400 feet elevation in desert scrub habitat, in the sandy soils of dry washes and rocky hillsides. Glandular ditaxis is an annual or short-lived perennial that blooms from October through March (CNPS, 2016); while it can be detected during spring surveys, it is easier to detect in the fall following the start of the rainy season (CEC, 2010). There are 43 occurrences in the Consortium of California Herbaria (CCH, 2016); the nearest is from the Arica Mountains, about 28 miles from the project site. The CNDDB lists 26 occurrences, two within the general vicinity of the Project (Corn Springs and Sidewinder Well quads).

The PSPP PA/FEIS (Section 3.18; BLM, 2011) stated that glandular ditaxis was not recorded in the PSPP disturbance area. It was not observed during 2009, 2010 (including late-season surveys), 2016, or 2017 field surveys. Suitable habitat is present, and the potential for glandular ditaxis to occur within the project site is moderate.

Lobed Ground Cherry

Lobed ground cherry (*Physalis lobata*) has a CRPR of 2B.3 and a NatureServe rank of G5/S1S2, meaning that is imperiled to critically imperiled within California, but more common elsewhere. It is a late season perennial that blooms from September to January (CNPS, 2016). It occurs in desert scrub on decomposed granite soils, playas, and alkaline dry lake beds from approximately 1,500 feet to 2,400 feet elevation. There are 36 occurrences in the Consortium of California Herbaria (CCH, 2016), all to the north in Mojave Desert habitat. The nearest collection is approximately 29 miles northwest of the project site.

The PSPP PA/FEIS (Section 3.18; BLM, 2011) stated that lobed ground cherry was not recorded in the PSPP disturbance area. This species was not observed during 2009, 2010 (including late-season surveys), 2016, or 2017 field surveys. Suitable habitat is present but the site is well outside its known geographic range and the potential for lobed ground cherry to occur within the project site is low.

Desert Unicorn Plant

Desert unicorn plant (*Proboscidea althaeifolia*) has a CRPR of 4.3 and a NatureServe rank of G5/S3.3. This status indicates that it has limited distribution, but is not very threatened in California. It is also a covered species under the NECO Plan. This is a low-growing, perennial species that occurs in sandy washes within Sonoran desert scrub habitats in San Bernardino, Imperial, Riverside, and San Diego Counties. There are 13 records known from the NECO planning area in Milpitas Wash, Chuckwalla Valley, and Chemehuevi Valley (BLM CDD, 2002). It has been identified in the region of other solar projects (CEC, 2010). It is a late-season bloomer (May to August), but it has large and distinctive seed pods that can be detected during the spring season and fleshy root structure that can remain dormant in dry years (BLM, 2011). There are 86 records in the Consortium of California Herbaria, several of which are from the Chuckwalla Mountains and Desert Center area (CCH, 2016).

The PSPP PA/FEIS (Section 3.18) stated that desert unicorn plant was not recorded in the PSPP disturbance area. It was not observed during 2009, 2010 (including late-season surveys), 2016, or

2017 field surveys. However, suitable habitat is present and the potential for desert unicorn plant to occur within the project site is high.

Jackass Clover

Jackass clover (*Wislizenia refracta* ssp. *refracta*) has a CRPR of 2B.2 and a NatureServe rank of G5T5/S1, meaning it is critically imperiled in California, but more common elsewhere. It occurs in desert dunes, Mojavean desert scrub, playas, or Sonoran desert scrub on sandy washes, roadsides, or alkaline flats, of elevations from 425 to 2,630 feet (CDFW, 2016). There are 29 occurrences in the Consortium of California Herbaria (CCH, 2016). Jackass clover was also documented at several locations from the northern to southern end of Palen Lake in dune habitats during a detailed vegetation mapping and classification project conducted by CNPS Vegetation Program for BLM (Evens and Hartman, 2007). The populations of jackass clover at Palen Lake were considered to be unique stands and are included in the PSPP analysis as a sensitive natural community (PSPP PA/FEIS; BLM; 2011). While the plant itself is a special status species, the vegetation type has no current CNDDB ranking as "unique stands" and it is not addressed here as a sensitive natural community.

The PSPP PA/FEIS (Section 3.18; BLM, 2011) stated that jackass clover was not recorded in the PSPP disturbance area. Jackass clover was not observed during spring 2009 or 2010 botanical surveys, or during fall surveys completed in October 2010 (CEC, 2010). This species was not observed during 2009, 2010 (including late-season surveys), and 2016, or 2017 field surveys. A reference population was observed flowering in Twentynine Palms in October 2010, but this locality is 50 miles northwest of the project site, with different habitat and climatic characteristics. The potential for jackass clover to occur within the project site is moderate.

Palmer's Jackass Clover

Palmer's jackass clover (*Wislizenia refracta* ssp. *palmeri*) has a CRPR of 2B.2 and a NatureServe rank of G5T2T4/S1. Its status indicates that global populations of Wislizenia refracta are secure, but the subspecies palmeri varies from imperiled to secure based on location and is considered critically imperiled in California. Palmer's jackass clover is a perennial herb that occupies sandy washes and Sonoran desert scrub habitat from sea level to 650 feet. There are 29 occurrences in the Consortium of California Herbaria (CCH, 2016).

The PSPP PA/FEIS (Section 3.18; BLM, 2011) stated that Palmer's jackass clover was not recorded in the PSPP disturbance area. Palmer's jackass clover was not observed during spring 2009 or 2010 botanical surveys, or during fall surveys completed in October 2010; although the reference population on the Palen Sand Dunes near the BLM Desert Lily Sanctuary was observed flowering in October 2010 (CEC, 2010). This species was not observed during 2009, 2010 (including late-season surveys), 2016, or 2017 field surveys. Suitable habitat is present and the potential for Palmer's jackass clover to occur within the project site is moderate.

Cacti, Yucca, and Native Trees

Most native cacti, succulents, and native trees are not special status plant species, but the harvesting of these native plants is regulated under the Native Plant Protection Act and the California Desert Native Plants Act of 1981 (see State Laws and Regulations, above).

At the request of the BLM, surveys were conducted for cacti, yucca, and native trees in the project site, primarily to search for and map any locations of California barrel cactus (*Ferocactus cylindraceus*), cottontop cactus (*Echinocactus polycephalus*), or hedgehog cactus (*Echinocactus engelmannii*) for future salvage when construction begins (CEC, 2010).

Five species of cacti were observed within the solar facility boundary, including hedgehog cactus, teddybear cholla (*Cylindropuntia bigelovii*), silver cholla (*C. echinocarpa*), pencil cholla (*C. ramosissima*), and common fishhook cactus (*Mammillaria tetrancistra*). Two additional cactus species were observed along the gen-tie: California barrel cactus and cottontop cactus. Additionally, ocotillo (*Fouquieria splendens* ssp. *splendens)* and three species of native trees were found within the project site: smoke tree (*Psorothamnus spinosus*), ironwood (*Olneya tesota*), and blue palo verde (*Parkinsonia florida*).

Creosote Rings

Creosote rings are naturally occurring groups of creosote bush plants arranged in a roughly circular or elliptical pattern several meters in diameter. The numerous individual plants in each ring originated from a single individual that spread outward over the course of many years. As dead wood rots away at the center, the original plant develops into multiple genetic clones, slowly growing outward from the center of the original plant, with a bare area in the center. They are generally found on stable land surfaces such as gentle alluvial fans, flats, or benches not subject to significant erosion. Large elliptical clones may be more than 20 meters across. Vasek (1980) originally documented this pattern and estimated the age of the largest known clone as 11,700 years. Seven possible creosote rings have been identified in the northern part of the project site (Ironwood 2017; see Appendix B-2). All seven are within Sand Transport Zone III and within habitat evaluated as suitable Mohave fringe-toed lizard habitat. Although these seven occurrences are reported as "possible" creosote rings, this analysis presumes that they are clonal creosote rings as described by Vasek (1980).

3.17.2.8 Invasive and Noxious Weeds

Noxious and invasive weeds are species of non-native (exotic) plants included on the weed lists of the California Department of Food and Agriculture (CDFA) or the California Invasive Plant Council (Cal-IPC), or those weeds of special concern identified by the BLM. They are of particular concern in wildlands because of their potential to degrade habitat and disrupt the ecological functions of an area (Cal-IPC, 2016). Specifically, non-native plants can alter habitat structure, increase fire frequency and intensity, decrease forage (including forage for special status species such as desert tortoise), exclude native plants, and decrease water availability for native plants and wildlife.

Non-native plants recorded as part of botanical surveys during 2009, 2010, and 2016 were primarily located in the eastern and southern extent of the project site. These species are: Sahara mustard, Russian thistle, saltcedar (*Tamarix ramosissima*), and Mediterranean grass. Each of these species is identified on a list of the region's worst weeds compiled by the Natural Resource Conservation Service for the Low Desert Weed Management Area (CEC, 2010).

Sahara Mustard

Sahara mustard is a dicot of the mustard family, native to the deserts of North Africa, the Middle East, and the Mediterranean regions of southern Europe (Bossard et al., 2000). Its initial establishment in California occurred through the importation of date palms from the Middle East to the Coachella Valley during the early 1900s (Bossard et al., 2000). Sahara mustard currently occurs across Riverside County, as well as all neighboring counties (Cal-IPC, 2016). Sahara mustard is considered by Cal-IPC to have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure, as well as having reproductive biology and other attributes that are conducive to moderate to high rates of dispersal and establishment (Cal-IPC, 2016). It is a BLM weed of special concern. It promotes the spread of fire by increasing fuel load and competes with native plants for moisture and nutrients. In addition, it increases cover and stabilizes sand, thereby affecting wildlife species dependent on open sandy habitat (CEC, 2010). Sahara mustard is not listed on the CDFA Noxious Weed List (CDFA, 2016). Sahara mustard was found in disturbed areas throughout Sonoran creosote bush scrub habitat within the project site (BLM, 2011).

Russian Thistle

Russian thistle is a dicot, annual herb that is found in open and disturbed areas throughout western North America. Also known as tumbleweed, it becomes large and round with age, breaking off and rolling with the wind to aid in seed dispersal. Native to Eurasia, it was probably introduced around the turn of the century. It is salt tolerant, and can be found in both dry and wetland habitats (CDFA, 2016). Russian thistle has a Limited-to-Moderate rating by the Cal-IPC, indicating that it is invasive, but has an ecological impact that is minor on a statewide level, or there was not enough information to justify a higher score. Its reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but it may be locally persistent and problematic. Russian thistle is listed on the CDFA Noxious Weed List (CDFA, 2016).

Although all invasive plants share the trait of being adapted to disturbed habitat, Russian thistle particularly tends to be abundant on roadway shoulders and other sites where the soil has been recently disturbed. Once an area is disturbed, it competes readily and can affect native plant ecosystems and increase fire hazard, but often declines if there is no further soil disturbance. Dune habitat is inherently naturally disturbed by moving sand, and it is particularly vulnerable to non-native species which can stabilize sand or block sand movement, and Russian thistle is considered an invasive species of primary concern in this habitat (CEC, 2010). Russian thistle was found in several habitat types in the project site, including dune, desert dry wash woodland, and Sonoran creosote bush scrub (BLM, 2011).

Saltcedar (Tamarisk)

Saltcedar or tamarisk (*Tamarix ramosissima*) is restricted to habitats where there is perennial saturation such as springs and seeps, runoff from poorly maintained water pipelines or well pumps, or subsurface water. Saltcedar is a BLM weed species of concern. Cal-IPC has classified it as highly invasive, and it is a CDFA "B" rated species, meaning it is a pest of known economic or environmental detriment of limited distribution. Saltcedar is associated with many ecological impacts, including impacts to channel geomorphology, groundwater availability, plant species

diversity, and fire frequency. Saltcedar also can affect sand dunes by blocking sand movement, a vital part of the natural function of these habitats (CEC, 2010). Saltcedar is interspersed throughout desert dry wash woodland within the project site.

Mediterranean grass

Mediterranean grass (*Schismus barbatus* and *S. arabicus*) is an annual grass found in central and southern California, particularly in disturbed areas and deserts, probably introduced at the turn of the century (CDFA, 2016). Cal-IPC considers Mediterranean grass to have limited invasive potential, meaning that it is invasive although its ecological impacts are minor on a statewide level, or there was not enough information to justify a higher score. These species' reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited. Spread may occur due to soil disturbance and vegetation cutting, which could disperse seeds, as well as from vehicle tires and footwear. Increase of these species is most likely to occur in areas where they already exist.

Mediterranean grass competes effectively with native plants for nutrients and water and can provide cover that prevents native annuals from sprouting and contributes to dune stabilization. Historically, fire was rare in the Colorado Desert. The presence of Mediterranean grass and other annual non-native herbs has provided a continuous and increased fuel load, influencing the extent, frequency, and intensity of fire in these ecosystems (CEC, 2010). Because of its aid in the destruction of native shrub species by wildfire, Mediterranean grass contributes to the type-conversion of desert shrubland into annual grassland. Mediterranean grass is not listed on the CDFA's Noxious Weed List (CDFA, 2016). BLM and other agencies recognize that, because of the widespread distribution of Mediterranean grass, this species is not considered feasible to eradicate. Mediterranean grass is prevalent throughout Sonoran creosote bush scrub within the project site.

3.17.2.9 Jurisdictional Waters

A jurisdictional delineation report for regulated waters was prepared for the PSPP in 2009 (CEC, 2010) to determine the extent of potential jurisdictional waters of the U.S. and waters of the State within the site. This includes waters (and wetlands) regulated under the federal Clean Water Act and streams and associated habitat regulated under the California Fish and Game Code. It was assumed there are no potential jurisdictional waters of the U.S. within the project site because the site is within a closed basin with no identifiable outlet and have no direct hydrologic connection to any navigable waters (USACE, 2010).

An updated jurisdictional delineation for the Proposed Action has not been conducted, but the desert dry wash woodland (202 acres) and unvegetated ephemeral dry wash (162 acres) identified within the Palen Solar Project site are expected to meet jurisdictional criteria as waters of the State.

A total of 18 acres of jurisdictional State waters (unvegetated ephemeral dry washes) were delineated downstream of the PSPP Disturbance Area (preferred alternative), encompassing the full downstream reach of waters that would likely be indirectly affected by the PSPP. The Proposed Action is expected to have a similar downstream reach of jurisdictional State waters that would be indirectly affected.

Historic Hydrologic Alterations

Prior to construction of the I-10 freeway and related flood control structures (wing dikes), surface flow occurred as sheet flow and along many small flow paths, in meandering and braided patterns on the alluvial fan that historically drained unimpeded from the Chuckwalla Mountains and toward Palen Dry Lake. A series of wing dikes were constructed just upstream (south) of the freeway, diverting the flows of numerous smaller channels into the three largest branches of Corn Springs Wash, which I-10 crosses with three short bridge spans. These dikes and bridges along I-10 concentrate the flows of dozens of small washes into three discrete discharge points. The westerly bridge near Corn Springs Road Interchange conveys flows from the main branch of Corn Springs Wash to the northwest corner of the site. The two other bridges convey flows to the center and east side of the project site, respectively. The flat topography at the outlet of the culverts creates an initially incised watercourse, which rapidly diminishes and eventually spreads out into numerous small, newly formed channels that abate fairly quickly. Many dead and declining ironwood trees are still evident on sites no longer subject to surface flow and there is a marked decrease in the cover, vigor, diversity, and overall habitat function and value in the impaired reaches on the site. This observation is supported by comparisons of current and historical aerial photography of the project site (before and after the diversions) (CEC, 2010).

Function and Value of State Waters for Vegetation

The desert dry washes are ecologically important to the area. These areas are distinct from the surrounding uplands, providing more continuous vegetation cover and microtopographic diversity. Increased plant productivity and vegetation structure of wash-dependent and upland vegetation along these washes support food webs, provide seeds for regeneration, habitat for wildlife, and create cooler, more hospitable microclimatic conditions essential for plants and animals. Surface water may persist after rains in localized seeps or pools longer than surrounding areas; annual plant abundance and diversity is especially high in these areas after seasonal rains. The vegetation, whether dominated by woodland trees or shrubs and perennial herbs, also contributes channel roughness that reduces the velocity of floodwaters, and provides organic matter for soil development and nutrient cycling. The desert dry wash woodland, in particular, provides shade, cover, and food sources otherwise not available in the surrounding desert. Desert wash woodland vegetation also serves to stabilize channel banks and dissipate stream energy which aids in flood control (CEC, 2010).

3.18 Visual Resources

Visual resources are the visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features). This chapter describes the project site in terms of its existing value as a visual resource, and describes the applicable regulatory framework for managing and protecting scenic values. This section focuses on determining the extent and quality of visual resources on the project site by referencing existing inventory efforts that used the methodology outlined in BLM's Visual Resource Management (VRM) Program. The previous analyses of impacts on visual resources for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.12, Visual Resources.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.19, Visual Resources.

The affected environment and regulatory information presented in the documents listed above was reviewed and determined to still be current and accurate for analysis of impacts to visual resources. It is repeated or summarized in this section. No additional information has been incorporated into the description of the affected environment.

3.18.1 Regulatory Framework

BLM's VRM Program is the agency's implementation of legal requirements for managing scenic resources established through FLPMA. Under FLPMA, BLM has developed and applied a standard visual assessment methodology to inventory and manage scenic values on lands under its jurisdiction. The BLM manual M-8400-Visual Resource Management, Handbook H-8410-Visual Resource Inventory, and Handbook H-8431-Visual Resource Contrast Rating set forth the policies and procedures for determining visual resource values, establishing management objectives, and evaluating proposed actions for conformance to the established objectives for BLM-administered public lands. The following describes the three primary elements of the BLM's VRM Program.

Determining Visual Resource Values

The primary means to establish visual resource values are to conduct a Visual Resource Inventory (VRI) as described in BLM Handbook H-8410. There are four VRI Classes (I to IV) assigned as a representation of the relative visual value. VRI Class I has the highest value and VRI Class IV has the lowest. VRI Class I is reserved for special congressional designations or administrative decisions such as Wilderness Areas, Areas of Critical Environmental Concern (ACEC), or Wild and Scenic Rivers, etc. VRI Classes II through IV are determined through a systematic process that documents the landscape's scenic quality, public sensitivity, and visibility. Rating units for each of the three factors are mapped individually, evaluated, and then combined through an overlay analysis. The three factors are briefly described below.

Scenic Quality: Scenic Quality Rating Units (SQRUs) are delineated based on common physical characteristics of the landscape. There are seven criteria used for inventorying the landscape's scenic quality within each SQRU: landform, vegetation, water, color, influence

of adjacent scenery, scarcity, and degree of cultural modification. Each factor is scored for its respective contribution to the scenic quality; the scores are summed; and the unit is given a rating of A (highest), B, or C (lowest) based on the final score.

Sensitivity Level: Sensitivity Level Rating Units (SLRU) are delineated and evaluated for public sensitivity to landscape change. Criteria used for determining level of sensitivity within each unit includes types of use, amount of use, public interest, adjacent land uses, special areas, and other factors. Each criterion is ranked high, medium, or low and an overall sensitivity level rating is then assigned to the unit.

Distance Zones (Visibility): The third factor is visibility of the landscape evaluated from where and how it is viewed by the public. The distance zones are divided into foreground/middleground (3 to 5 miles); background (five to 15 miles); and seldom seen (beyond 15 miles or topographically concealed areas within the closer-range distance zones).

The relationships between the rated values of scenic quality, sensitivity level, and visibility are cross-referenced with the VRI Matrix to determine the VRI Class, as shown in Table 3.18-1. VRI Classes are informational in nature and provide the basis for considering visual values in the Resource Management Planning (RMP) process. They do not establish management direction and should not be used as a basis for constraining or encouraging surface disturbing activities. They are considered the baseline data for existing conditions.

Table 3.18-1. Determining Visual Resource Inventory (VRI) Classes

		Sensitivity Level						
		High			Medium			Low
Special Areas		I	I	I	I	I	I	I
Scenic Quality	A	II	II	II	II	II	II	II
	B	II	III	III*	III	IV	IV	IV
				IV*				
	C	III	IV	IV	IV	IV	IV	IV
Distance Zones		f/m	b	s/s	f/m	b	s/s	s/s

* If adjacent areas are Class III or lower, assign Class III; if higher, assign Class IV
f/m = Foreground/Middleground
b = Background
s/s = Seldom Seen

Establishing Management Objectives

VRM Classes (defined in Table 3.18-2 are determined by considering both VRI Class designations (visual values) along with resource allocations or special management decisions made in the applicable RMP. Management objectives for each VRM Class set the level of visual change to the landscape that may be permitted. The objective of VRM Class I is to preserve the existing

character of the landscape. Thus, the allowable levels of visual change for VRM Classes I through IV are decreasingly restrictive.

Table 3.18-2. Visual Resource Management Classes

VRM Class	Objective
Class I	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV	The objective of this class is to provide for management activities which require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.

VRI Classes are not intended to automatically become VRM Class designations. Management classes are determined through careful analyses of other land uses and demands. The VRM Classes are considered a land use plan decision that guides future land management actions and subsequent site-specific implementation decisions. VRM Class designations are to be assigned to all BLM-administered public land. VRM Class designations may be different than the VRI Classes assigned in the inventory and should reflect a balance between protection of visual values while meeting energy and other land use, or commodity, needs. For example, an area with a VRI Class II designation may be assigned a VRM Class IV designation, based on its overriding value for mineral resource extraction or its designation as a utility corridor.

The applicable RMP for the project site is the California Desert Conservation Act (CDCA) Plan which does not contain a visual resource element and has no established VRM Classes. When a project is proposed, and there are no RMP-approved VRM objectives, Interim VRM Classes must be established. These classes are developed using the process just described, but may be restricted in geographic scope to areas affected by the Proposed Action. If the area is also without a VRI, then one must be conducted in order to provide a baseline of data by which to analyze impacts and to inform appropriate designation of interim VRM Classes.

Evaluating Proposed Actions

Proposed plans of development are evaluated for conformance to the VRM Class objectives through the use of the Visual Resource Contrast Rating process set forth within BLM Handbook H-8431-1. Because this concerns the environmental consequences of the Proposed Action, this process is further described and applied in Chapter 4.18.

3.18.2 Existing Conditions

Regional Landscape

The project landscape is part of the Great Basin section of the Basin and Range physiographic province, a vast desert area of the western U.S. extending from eastern Oregon to western Texas, characterized by periodic north-south trending, highly eroded mountain ranges that rise sharply from and are separated by broad, flat desert valleys. The project region marks the transition zone between the high elevation Mojave Desert to the north and the arid, lower elevation Sonoran Desert to the south and east. The project site is located adjacent and to the north of I-10 in Chuckwalla Valley, approximately 9 miles east of Desert Center in eastern Riverside County. The Chuckwalla Valley is a broad, flat desert plain that includes scattered dry lakes and rolling sand dunes and is bordered by a number of rugged mountain ranges including the Eagle Mountains to the west and north, the Coxcomb and Granite Mountains to the north, the Palen Mountains to the northeast, and the Chuckwalla Mountains to the south.

Viewshed

The viewshed or area of potential visual effect (the area within which the Project could potentially be seen) is extensive and encompasses much of Chuckwalla Valley and the project site-facing slopes and ridgelines of the surrounding mountains. A feature of this desert landscape is the potential for large projects to be seen over great distances. This is due to the large, open areas of level topography and absence of intervening landscape features. There are a number of sensitive land uses and protected areas within the expansive viewshed of the project site including: to the north, Palen Dry Lake and Sand Dunes Area; to the northeast, Palen-McCoy Wilderness; to the east, Palen Dry Lake ACEC and Ford Dry Lake OHV Area; to the south, Chuckwalla Mountains Wilderness; to the west, Alligator Rock ACEC and Desert Center; and to the northwest, Desert Lily Sanctuary ACEC, and Joshua Tree Wilderness. This portion of Chuckwalla Valley offers panoramic views of a desert plain landscape that appears relatively visually intact though a number of dispersed energy facilities are visible in the expansive valley landscape including three transmission lines to the south, Red Bluff Substation to the west, the Desert Sunlight Solar Farm to the northwest, and the Genesis Solar Electric Project to the east. Although no viewshed maps were prepared for this analysis, the viewshed maps for the PSPP (PSPP RSA Section C.12 Visual Resources Figures 2A and 2B) are still applicable for PV and is presented in this analysis as Figures 3.18-1A and 3.18-1B.

Project Site

The project site is presently undeveloped and consists mainly of desert scrub (largely scattered creosote bush), lakebed, and dune landscapes and is predominantly intact on the broad Chuckwalla Valley floor (elevation 150 feet). There are three desert washes, indicated primarily by associated vegetation (desert dry wash woodlands), traversing the site. A wood-pole, H-frame 161 kV subtransmission line passes through the southwestern corner of the project site, and several BLM 4WD roads that provide recreational access to Palen Dry Lake, the Palen Sand Dunes Area, Palen Dry Lake ACEC, and the perimeter of the Palen-McCoy Wilderness also cross the site. The rugged ridges, angular forms and bluish hue of the Palen Mountains to the immediate east of the project

site provide a contrast of visual interest to the flat, light-colored horizontal landform of the Chuckwalla Valley floor and project site. The area surrounding the project site is very lightly populated.

Visual Resource Inventory

The baseline mapping of landscape units in this assessment was originally derived from the visual resource inventory developed in connection with the 2006 Devers-Palo Verde No. 2 Transmission Line EIR/EIS (DPV2 EIR/EIS). In the baseline setting for that document, landscape units were delineated, assessed, and rated following the BLM's VRI process. The applicable portions of that document, which include photographs and an evaluation of scenic quality factors, was utilized for the present analysis. The visual resource inventory mapping and evaluation reflects an assessment of the landscape's *scenic quality*, *viewer sensitivity*, and *distance zones*. Based on these factors, the project site was assigned to VRI Class III, which represents a moderate visual value. The DPV2 EIR/EIS inventory mapping and analysis of the area affected by the Proposed Action is incorporated herein by reference and summarized briefly below.

Since establishment of the VRI Class III during the 2006 DPV2 EIR/EIS, the VRI Class III assignment for the project site was reiterated in the PSPP Final EIS in 2011. As part of the Western Solar Plan, the BLM conducted a VRI for the Riverside East Solar Energy Zone (SEZ) and surrounding lands in 2010. The region of the Riverside East SEZ that includes the Palen Solar Project was assigned a VRI Class III. This assignment was reiterated in the BLM Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA) Final EIS in November 2015. Since the original VRI Class III assignment in 2006, the regional landscape in the central Chuckwalla Valley has experienced considerable change with the addition of several energy projects including solar projects, electric substations, and electric transmission lines and gen-tie lines. However, the immediate project area has seen little landscape change and the scenic quality remains consistent with the original VRI Class III assignment.

Scenic Quality Rating

The Project is located partly in SQRU 10 and partly in SQRU 12 (as developed in the Inventory for the 2006 DPV2 EIR/EIS), both of which represent the flat desert floor along the Chuckwalla Valley. The landform of the Chuckwalla Valley SQRU is flat and non-descript with grass and low-growing shrubs of subdued color. Though distant mountain ranges (e.g., the Palen Mountains to the north and the Chuckwalla Mountains to the south) provide backdrops of visual interest (not part of this unit), SQRU 10 and 12 are primarily influenced by the presence of existing utility infrastructure and I-10.

These landscape units are rated as C-Quality scenery, based on the combination of scores for landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. The most influential factor in these units' low rating for scenic quality was the abundance of cultural modification along I-10 (roads, transmission lines, 4WD tracks, etc.) and the flatness and lack of visual variety in landform (although relatively high scores were assigned for adjacent scenery).

Sensitivity-Level Rating

The CDCA was designated by Congress in large part for its visual values and uniqueness in terms of being a fairly undisturbed portion of the California Desert close to large population centers. In

recognition of this, VRI within the CDCA have historically regarded the entire CDCA as having a high viewer sensitivity level (BLM, 1980). Thus, the project area is assigned a high visual sensitivity. This rating is supported by the high public interest in the desert landscape, presence of special areas, relatively high quality of adjacent scenery, and very high number of adjacent viewers on I-10.

Distance Zones

The distance zone for all portions of the Project is assigned to foreground/middleground (under 5 miles) due to the distance of I-10 and other local roads to the Project.

Interim Visual Resource Management Classes

As discussed above, VRM Classes are typically assigned by the BLM through its RMPs; but, in the case of the project site, VRM Classes were not established in the CDCA Plan. Instead, BLM land managers have established "Interim" VRM Classes for each project on a case-by-case basis until the applicable RMP is updated with assigned VRM Classes. The 2006 DPV2 EIR/EIS determined Interim VRM Classes, which were subsequently approved by the BLM. The Interim VRM Class covering the project area is Class III. In the specific case of the DPV2 EIR/EIS, the VRI and VRM Class assignments were the same.

Subsequent to the VRI Class III and Interim VRM Class III assignments to the present project area during the 2006 DPV2 EIR/EIS, the VRI Class III assignment for the project site was reiterated in the PSPP Final EIS in 2011. In 2015, the DRECP LUPA identified the project site location as being within a Development Focus Area (DFA), which is an area where the activities associated with solar, wind, and geothermal development, operation, and decommissioning are allowed. Although the LUPA assigns VRM Class IV designations to DFAs, since the Proposed Action pre-dates the DRECP LUPA decision, it is not subject to the DRECP LUPA VRM assignment. Therefore, the present analysis assumes the Project would be managed in accordance with the Interim (at the time) VRM Class III objective. This allows for a moderate level of change to the characteristic landscape while partially retaining the existing character of the landscape. This VRM Class assignment is also consistent with the Multiple-Use Class (MUC) M (Moderate Use) that is also assigned to the project area. MUC M seeks a controlled balance between higher intensity use and protection of public lands. MUC M provides for a wide variety of present and future uses such as mining, livestock grazing, recreation, energy, and utility development.

3.19 Water Resources

This section describes the water resources baseline for the Palen Solar Project. The analyses of water resource impacts for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 California Energy Commission (CEC) Revised Staff Assessment (RSA) for the PSPP, Section C.9, Soil and Water Resources.
- For CEQA, the 2013 CEC Final Staff Assessment (FSA) for the PSEGS (solar power tower analysis), Section 4.9, Soil and Water Resources.
- For CEQA, the 2014 CEC Revised Presiding Member's Proposed Decision for the PSEGS.
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.20, Water Resources.
- For NEPA, the 2013 PSEGS (solar power tower analysis): Draft Supplemental EIS (DSEIS), Section 3.20, Water Resources.

The affected environment and regulatory information presented in the documents listed above was reviewed and determined to still be current and accurate for analysis of impacts to water resources. It is repeated or summarized in this section. No additional information has been incorporated into the description of the affected environment.

The project site is located in the Chuckwalla Valley of Riverside County between the communities of Blythe, California (approximately 35 miles southeast of the Palen Solar Project) and Desert Center, California (approximately 9 miles to the west of the Project). It is located in the Mojave Desert Geomorphic Province. The Mojave Desert is a broad interior region of isolated mountain ranges separated by expanses of desert plains. It has an interior enclosed drainage (i.e., there is no outlet to the ocean) and many dry lake beds known as playas. The site lies near the toe of alluvial fans emanating from the Chuckwalla Mountains to the south, the Coxcomb Mountains to the north, and the Palen Mountains to the northeast; it is bisected by a broad valley-axial drainage that extends southward between these mountains and drains to the Palen Lake playa located a short distance north of the site. The elevation of Chuckwalla Valley ranges from under 400 feet above mean sea level (amsl) at Ford Dry Lake to approximately 1,800 feet amsl west of Desert Center and along the upper portions of the alluvial fans that ring the valley flanks. The surrounding mountains rise to approximately 3,000 and 5,000 feet amsl (BLM, 2011).

The ground surface in the vicinity of the site slopes gently downward to the northeast at an average gradient of 1.33 percent. Ground surface elevations at the site itself range from approximately 680 feet amsl in the southwest to 425 feet amsl in the northeast. Steeper grades are present at isolated sand dunes along the northern portion of the site. Toward the north and central portions of the site, the ground becomes hummocky as it transitions to the flat playa located along the northern portion of the site. On-site drainage is generally to the north (toward the Palen Dry Lake), and occurs in a number of alluvial channels and as unconfined flow (sheet flow) during larger storm events (BLM, 2011). The Corn Springs Wash, originating in the Chuckwalla Mountains, is the primary drainageway entering the site from the southwest.

3.19.1 Regulatory Framework

3.19.1.1 Federal

Clean Water Act (CWA) of 1977 (Including 1987 Amendments) Sections 401, 402 and 404

The primary objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's surface waters. Pollutants regulated under the CWA include priority pollutants, including various toxic pollutants; conventionall pollutants, such as biochemical oxygen demand, total suspended solids, oil and grease, and pH; and non-conventionall pollutants, including any pollutant not identified as either conventional or priority.

Clean Water Act Section 401

Section 401 of the CWA requires certification from the California Regional Water Quality Control Board, operating under the authority of the State Water Resources Control Board (SWRCB), that the Proposed Action is in compliance with established water quality standards. The SWRCB administers nine regional boards. The Palen Solar Project is under the jurisdiction of the Colorado River Basin Regional Water Quality Control Board, hereinafter referred to as the RWQCB. Projects that have the potential to discharge pollutants are required to comply with established water quality objectives. These requirements include the implementation of Best Management Practices (BMPs) during site grading activities and other activities associated with construction of the facility.

Section 401 provides the SWRCB and the RWQCB with the regulatory authority to waive, certify, or deny any proposed federally permitted activity, which could result in a discharge to Waters of the State. To waive or certify an activity, these agencies must find that the proposed discharge will comply with state water quality standards. According to the CWA, water quality standards include beneficial uses, water quality objectives/criteria, and compliance with the EPA's anti-degradation policy.

No license or permit may be issued by a federal agency until certification required by Section 401 has been granted. Under the CWA, U.S. Army Corps of Engineers (USACE) Section 404 permits (described below) are subject to RWQCB Section 401 Water Quality Certification (Title 23 CCR Sections 3830 through 3869). The ephemeral drainages on the project site were found by the USACE to not conform to the requirements for designation as jurisdictional Waters of the U.S.

The RWQCB has authority under the Porter-Cologne Water Quality Control Act (Porter-Cologne), described in more detail below, to regulate discharge of waste to Waters of the State. The definition of Waters of the State is broader than for Waters of the U.S. All waters are considered to be Waters of the State regardless of circumstances or condition. The term "discharge of waste" is also broadly defined in Porter-Cologne, such that discharges of waste include fill, any material resulting from human activity, or any other discharge that may directly or indirectly impact Waters of the State relative to implementation of Section 401 of the CWA.

Porter-Cologne authorizes the RWQCB to regulate discharges of waste and fill material to Waters of the State, including isolated waters and wetlands, through the issuance of waste discharge requirements (WDRs). Under Porter-Cologne all parties proposing to discharge waste that could affect the quality of Waters of the State, other than into a community sewer system, shall file with the appropriate RWQCB a Report of Waste Discharge (ROWD) containing such information and data as may be required by the RWQCB.

Clean Water Act Section 402

Direct and indirect discharges and stormwater discharges into waters of the United States must be made pursuant to a National Pollutant Discharge Elimination System (NPDES) permit (CWA Section 402). NPDES permits contain industry-specific, technology-based limits and may also include additional water quality-based limits, and establish pollutant-monitoring requirements. A NPDES permit may also include discharge limits based on Federal or State water quality criteria or standards.

In 1987, the CWA was amended to include a program to address stormwater discharges for industrial and construction activities. Stormwater discharge is covered by an NPDES permit, either as an individual or general permit. The WQCB administers the NPDES permit program under the CWA in the project area. The Palen Solar Project would disturb more than one acre of ground, placing the Project under the NPDES. It would be required to obtain NPDES coverage under the California General Permit for Discharges of Storm Water Associated with Construction Activity (General Construction Permit). The General Construction Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) describing BMPs the discharger would use to protect stormwater runoff. The SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a waterbody listed on the 303(d) list for sediment. Section 3.19.1.2 California Storm Water Permitting Program describes this further.

Clean Water Act Section 404

Activities resulting in the dredging or filling of jurisdictional waters of the U.S. require authorization under a Section 404 permit issued by the USACE. The USACE may grant authorization under either an individual permit or a nationwide permit (NWP) to address operations that may affect the ephemeral washes on the project site. Section 404 permits are also subject to CWA Section 401 water quality certification through the RWQCB.

An evaluation for jurisdictional waters on the project site, described in Section 3-17 of this Supplemental EIS, was performed in 2009. The ephemeral drainages on the Site were found not to conform to the requirements for designation as jurisdictional waters of the U.S. The USACE indicated in August 2010 that the drainages would not be considered jurisdictional waters of the U.S. Since the conditions on the site have not changed since 2010, this determination would remain valid.

EPA Septic System Policy and Regulations

The U.S. Environmental Protection Agency has policy and regulations covering septic systems and leach fields that would apply to the proposes leach field system.

3.19.1.2 State

SB 610

SB 610, passed in 2002, amended the California Water Code to require detailed analysis of water supply availability for certain types of development projects, and to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 requires detailed information regarding water availability to be provided to the city and county decision-makers prior to approval of specified large development projects. This information is to be included in the administrative record that serves as the evidentiary basis for an approval action by the city or county on such projects. The companion measure to SB 610, SB 221, applies to residential subdivisions, and does not apply to the Palen Solar Project. Both measures recognize local control and decision making regarding the availability of water for projects and the approval of projects. A Water Supply Assessment has been prepared for the Project in conformance with the requirements of SB 610 and is included as an appendix to this document; see Appendix G.

State of California Constitution Article X, Section 2

Article X, Section 2 prohibits the waste or unreasonable use of water, regulates the method of use and method of diversion of water and requires all water users to conserve and reuse available water supplies to the maximum extent possible.

California Storm Water Permitting Program

California Construction Storm Water Program. Construction activities that disturb one acre or more are required to be covered under California's General Permit for Discharges of Storm Water Associated with Construction Activity, Water Quality Order 99-08-DWQ (General Construction Permit CAS 000002).

Activities subject to permitting include clearing, grading, stockpiling, and excavation. The General Construction Permit requires the development and implementation of a SWPPP that specifies BMPs that will reduce or prevent construction pollutants from leaving the site in stormwater runoff and will also minimize erosion associated with the construction project. The SWPPP must contain site map(s) that show the construction site perimeter; existing and proposed structures and roadways; stormwater collection and discharge points, general topography both before and after construction; and drainage patterns across the site. Additionally, the SWPPP must describe the monitoring program to be implemented.

California Industrial Storm Water Program. Industrial activities with the potential to impact stormwater discharges are required to obtain an NPDES permit for those discharges. In California, an Industrial Storm Water General Permit, Order 97-03-DWQ (General Industrial Permit CAS 000001) may be issued to regulate discharges associated with ten broad categories of industrial activities, including electrical power generating facilities. The General Industrial

Permit requires the implementation of management measures that will protect water quality. In addition, the discharger must develop and implement a SWPPP and a monitoring plan. Through the SWPPP, sources of pollutants are to be identified and the means to manage the sources to reduce stormwater pollution described. The monitoring plan requires sampling of stormwater discharges during the wet season and visual inspections during the dry season.

A report documenting the status of the program and monitoring results must be submitted to the RWQCB annually by July 1. The General Industrial Permit, which requires the development and implementation of a SWPPP, is required for the Palen Solar Project's operations phase.

California Water Code

Interstate water courses (such as the Colorado River) have contract requirements that are the equivalent of permits. For example, use of Colorado River water requires a contract with the Secretary of the Interior (through the Bureau of Reclamation).

California recognizes two basic types of groundwater: Percolating Groundwater in a groundwater basin, and Groundwater Flowing in a Subterranean stream with defined underground channel bounded by impermeable bed and banks. Groundwater is assumed to be percolating unless there is evidence showing otherwise. Percolating groundwater, which applies to the CVGB, has no SWRCB permit requirement and supports two kinds of rights: (a) overlying rights, a correlative right of equal priority shared by all who own overlying property and use groundwater on the overlying property; and (b) non-statutory groundwater appropriative rights for use on the overlying property or on overlying property for which the water rights have been severed. The right to use groundwater on property that is not an overlying right is junior to all overlying rights, but has priority among other appropriators on a first in time use basis. Overlying users cannot take unlimited quantities of water without regard to the needs of other users. Surplus groundwater may be appropriated for use on non-overlying lands only if overlying rights can be satisfied first, provided the appropriator can demonstrate the availability of surplus water and that such use will not create an overdraft condition.

Riparian water rights come with owning a parcel of land that is adjacent to a source of water. Riparian Water Rights, as well as overlying and non-statutory appropriative groundwater rights (allowing diversions of the water away from the source), are all subject to modification to some degree if there is a basin-wide adjudication, which can be a proceeding commenced before the SWRCB as an adjudicative body (not a permitting role) or before a Court. In adjudication, unused riparian rights and unused overlying rights can be subordinated to appropriative rights. The Chuckwalla Valley Groundwater Basin (CVGB), which underlies the Palen Solar Project, currently is not an adjudicated basin.

The California Water Code allows any local public agency that provides water service and whose service area includes a groundwater basin or portion thereof that is not subject to groundwater management pursuant to a judgment or other order, to adopt and implement a groundwater management plan (California Water Code Sections 10750 et seq.) Groundwater Management Plans often require reports of pumping and some restrictions on usage. Currently, there is no Groundwater Management Plan for the CVGB listed on the DWR website on Groundwater Management Plans.

The California Legislature has found that by reason of light rainfall, concentrated population, the conversion of land from agricultural to urban uses and heavy dependence on groundwater, the counties of Riverside, Ventura, San Bernardino and Los Angeles have certain reporting requirements for groundwater pumping. Any person or entity that pumps in excess of 25 af of water in any one year must file a "Notice of Extraction and Diversion of Water" with the SWRCB. (See Water Code Sections 4999 et seq.) The Project would be subject to this requirement since it is located in Riverside County and will require more than 25 afy during construction. After construction, annual water use is up to 41 af, so may be subject to this requirement.

The Palen Solar Project site is located on BLM land that overlies the CVGB. A method was developed by the USGS, in cooperation with the USBR, to identify groundwater wells outside the floodplain of the lower Colorado River that yield water that will be replaced by water from the river. The specific method to determine whether wells draw water from the Colorado River (referred to as the accounting surface) has not been promulgated by the USBR. However, wells placed into the groundwater beneath the project site that extract groundwater may, depending on whether the groundwater surface is above or below the accounting surface, be considered as drawing water from the Colorado River and require an entitlement to extract groundwater. Entitlements to extract and use the groundwater beneath the site are granted by the USBR through their designated representative in California, the Colorado River Board of California. After eligibility for groundwater extraction has been approved by the USBR, a contract must be established with the City of Needles to acquire the water. In California, the City of Needles monitors the use of water extracted from the river aquifer and is the designated contracting agent for the USBR.

Porter-Cologne Water Quality Control Act

The Porter Cologne Water Quality Control Act of 1967, Water Code Section 13000 *et seq.*, requires the SWRCB and the nine RWQCBs to adopt water quality criteria to protect State waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards, and implementation procedures. The criteria for the project area are contained in the Water Quality Control Plan for the Colorado River Basin (RWQCB, 2014). Constraints in the water quality control plans relative to the Palen Solar Project relate primarily to the avoidance of altering the sediment discharge rate of surface waters, and the avoidance of introducing toxic pollutants to the water resource. A primary focus of water quality control plans is to protect designated beneficial uses of waters. In addition, anyone proposing to discharge waste that could affect the quality of the waters of the state must make a report of the waste discharge to the Regional Water Board or State Water Board as appropriate, in compliance with Porter-Cologne.

California Streambed Alteration Agreement

Sections 1600–1616 of the California Fish and Game Code require that any public utility (or other entity) that proposes an activity that would substantially divert or obstruct the natural flow of any river, stream or lake; substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake; or, deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, must notify the California Department of Fish and Wildlife (CDFW). If the CDFW

determines the alteration may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement would be prepared. The Agreement includes conditions necessary to protect those resources. The Agreement applies to any stream including ephemeral streams and desert washes.

The Palen Solar Project would cause structures and roads to be constructed in Waters of the State, and notification under Section 1600 would be required.

TMDL Program

The California TMDL (Total Maximum Daily Load) Program evaluates the condition of surface waters and sets limitations on the amount of pollution that the water can be exposed to without adversely affecting the beneficial uses of those waters. The RWQCBs make a list of waters that are not attaining standards (are impaired), and develop total maximum daily loads to account for all sources of the pollutants that caused the water to be listed. TMDLs are established at the level necessary to implement the applicable water quality standards. When the TMDL is established as a standard, a program of implementation must be designed to implement the TMDL. TMDLs developed by RWQCBs are designed as Regional Basin Plan amendments and include implementation provisions. None of the watercourses on the Palen Solar Project property are impaired.

California Code of Regulations

Title 23, Division 3, Chapter 9 requires the RWQCB to issue a report of waste discharge for discharges of waste to land pursuant to the Water Code. The report requires submittal of information regarding the proposed discharge and waste management unit design and monitoring program. WDRs issued by the RWQCB provide construction and monitoring requirements for the proposed discharge. The SWRCB has adopted general waste discharge requirements (97-10-DWQ) for discharge to land by small domestic wastewater treatment systems.

Title 23, Division 3, Chapter 15 regulates all discharges of hazardous waste to land that may affect water quality. Chapter 15 broadly defines a waste management area as an area of land, or a portion of a waste management facility, at which waste is discharged. Therefore, unless exempted, all discharges of hazardous waste to land that may affect water quality are regulated by Chapter 15. This chapter outlines siting, construction and monitoring requirements for waste discharges to land for landfills, surface impoundments, land treatment units, and waste piles. The chapter provides closure and post-closure maintenance and monitoring requirements for surface impoundments.

State Water Resources Control Board Policies

Anti-Degradation Policy (Resolution No. 68-16). Requires the RWQCB, in regulating the discharge of waste, to: (a) maintain existing high-quality Waters of the State until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial uses, and will not result in water quality less than that described in State or Regional Water Boards policies; and (b) require that any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high-quality waters to meet

waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that: (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.

Sources of Drinking Water Policy (Resolution No. 88-63). This policy designates all groundwater and surface Waters of the States as potential sources of drinking water, worthy of protection for current or future beneficial uses, except where: (a) the total dissolved solids are greater than 3,000 milligrams per liter, (b) the well yield is less than 200 gallons per day (gpd) from a single well, (c) the water is a geothermal resource, or in a water conveyance facility, or (d) the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices.

Policies and Procedures for Investigations and Clean-up and Abatement of Discharges Under CWC Section 13304 (Resolution No. 92-49). This policy establishes requirements for investigation and cleanup and abatement of discharges. Under this policy, clean-up and abatement actions are to implement applicable provisions of Title 23 CCR Chapter 15, to the extent feasible. The policy also requires the application of Section 2550.4 of Chapter 15 when approving any alternative cleanup levels less stringent than background. It requires remediation of the groundwater to the lowest concentration levels of constituents technically and economically feasible, which must at least protect the beneficial uses of groundwater, but need not be more stringent than is necessary to achieve background levels of the constituents in groundwater.

3.19.1.3 Local

Riverside County Ordinance Code, Title 13, Chapter 13.20 – Water Wells

Section 13-.20.160 Well Logs requires that a report of well excavation for all wells dug or bored for which a permit has been issued be submitted to the Riverside County Department of Environmental Health within 60 days after completion of drilling.

Section 13.20.190 Water Quality Standards requires that water from wells that provide water for beneficial use shall be tested radiologically, bacteriologically and chemically as indicated by the Riverside County Department of Environmental Health. Laboratory testing must be performed by a State of California-certified laboratory. The results of the testing shall be provided to the County Department of Environmental Health within 90 days of pump installation.

Section 13.20.220 Well Abandonment provides that all abandoned wells shall be destroyed in such a way that they will not produce water or act as a channel for the interchange of water, and will not present a hazard to the safety and well-being of people or animals. Destruction of any well shall follow requirements stipulated in DWR Bulletin No.74-81, provided that at a minimum the top 50 feet shall be sealed with concrete, or other approved sealing material. Applications for well destruction must be submitted 90 days following abandonment of the well.

Section 13.20.240 Declaration of Proposed Reuse requires that any well that has not been used for a period of one year shall be properly destroyed unless the owner has filed a Notice of Intent with the health officer declaring the well out of service and declaring his intention to use the well again.

Riverside County Ordinance Code, Title 8, Chapter 8.124 – Sewage Discharge

Section 8.124.030, General Requirements for an Approval and Construction Permit requires the capacity, location, and layout of each private system, such as a septic system, to comply with the rules and regulations of the health officer, and the WDRs of the RWQCB. A private system shall be constructed and maintained on the lot which is the site of the building it serves, unless the health officer in his discretion authorizes a different location.

Section 8.124.050 Operation Permits requires that each private system be managed, cleaned, regulated, repaired, modified and replaced from time to time by the owner or owner representatives, in accordance with the rules, regulations and other reasonable requirements of the health officer in conformity with the WDR issued by the regional board and in a manner which will safeguard against and prevent pollution, contamination or nuisance.

Riverside County Title 15 Chapter 15.80 Regulating Flood Hazard Areas and Implementing the National Flood Insurance Program

This ordinance was developed to comply with Title 44 CFR Part 65 regarding requirements for the identification and mapping of areas identified as Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas. The ordinance is applicable to development within unincorporated areas of Riverside County and is integrated into the process of application for development permits under other county ordinances including, but not limited to, Ordinance Nos. 348, 369, 457, 460, and 555. The Palen Solar Project site or surrounding areas do not lie within a designated 100-year or 500-year floodplain. However, large portions of the site would be subject to flooding due mainly to the presence of Corn Springs Wash.

3.19.2 Existing Conditions

3.19.2.1 Climate and Precipitation

The climate in the Chuckwalla Valley is characterized by high aridity and low precipitation. The region experiences a wide variation in temperature, with very hot summer months with an average maximum temperature of 108 degrees Fahrenheit (°F) in July and cold dry winters with an average minimum temperature of 66.7 °F in December.

Average annual precipitation in the project area, based on the gauging station at Blythe Airport, is approximately 3.6 inches, with August recording the highest monthly average of 0.64 inches and June recording the lowest monthly average of 0.02 inches. Most rainfall occurs during the winter months or in association with summer tropical storms (which tend to be of shorter duration and higher intensity than winter storms) (BLM, 2011).

California, as most of the western United States, has recently been in a drought that was severe enough for the Governor of California in 2014 to declare a drought state of emergency calling for a variety of specific countermeasures including a statewide water conservation campaign, implementation of water shortage contingency plans, water use reductions for State facilities, transfers of water to where it is most needed, modification of reservoir releases, acceleration of funding for water supply enhancements, and other measures. The drought was sufficiently widespread that Colorado River flows were affected as indicated by the water level in Lake

Mead, which until recently was at historic lows. A continued drought would have an effect on water supplies from the Colorado River, and may lead to increased pressure on less populated groundwater basins including the CVGB. However, due to recent rainfall, the drought status has been lifted for the project area and large parts of the west, and the water level of Lake Mead has risen (LakesOnline, 2017). Under current conditions the drought threat is minimal.

3.19.2.2 Groundwater

Groundwater Overview

The Palen Solar Project overlies the CVGB. The CVGB (Figure 3.19-1) covers an area of 940 square miles in eastern Riverside County, California. It underlies the Palen and Chuckwalla Valleys, and is bounded by consolidated rocks of the Chuckwalla, Little Chuckwalla, and Mule Mountains on the south, of the Eagle Mountains on the west, and of the Mule and McCoy Mountains on the east. The Coxcomb, Granite, Palen, and Little Maria Mountains bound the valley on the north and extend ridges into the valley. There are no perennial streams in Chuckwalla Valley. Palen, Ford, and several smaller dry lakes are found in topographic low-points (CDWR, 2004). The surface watershed contributing to the area of the CVGB is 1,344 square miles, comprised of the Chuckwalla Valley (940 square miles) and the surrounding bedrock mountains (404 square miles).

Water-bearing units of the CVGB include Pliocene to Quaternary age continental deposits divided into Quaternary alluvium, the Pinto Formation, and the Bouse Formation. Figure 3.19-2A and Figure 3.19-2B show the geology of the area. Bedrock is as deep as 5,000 feet below ground surface in the eastern portion of the CVGB. In the vicinity of the Palen Solar Project, wells extended to a depth of approximately 800 feet below the ground surface as shown in Figure 3.19-3 (See Figure 3.19-4 for the location of the cross section shown in Figure 3.19-3). The average specific yield of the upper 500 feet of unconsolidated sediments is estimated to be 10 percent (CDWR, 2004). Specific yield is a measure of the capacity of the aquifer to release water in terms of the volume of water per unit volume of aquifer that can be released by pumping.

Total groundwater storage available to wells was originally estimated at 9,100,000 acre-feet (af), and more recently at 15,000,000 af (CDWR, 2004, CDWR, 1979). The estimate of 15,000,000 af was made by the CDWR based on multiplying specific yield times saturated thickness times basin size. Saturated thickness was obtained by subtracting the average depth to water from the average thickness of alluvial sediments, or 500 feet, whichever is smaller (CDWR, 1979). The 15,000,000 estimate, being the more recent, is used in this baseline analysis.

The CVGB is bordered by the Orocopia Valley groundwater basin on the west, the Palo Verde Mesa Groundwater Basin on the east, the Cadiz Valley and Ward Valley Groundwater Basins on the north, and the Pinto Valley Groundwater Basin on the northwest (Figure 3.19-1).

The CVGB is an unadjudicated groundwater basin. Owners of property overlying the basin have the right to pump groundwater from the basin for reasonable and beneficial use, provided that the water rights were never severed or reserved. At present, groundwater production in the basin is not managed by an entity and no groundwater management plan has been submitted to the

California Department of Water Resources (CDWR, 2016). There is no Urban Water Management Plan for the area, and there is no Integrated Regional Water Management Plan.

Water Bearing Units

Quaternary Alluvium. Quaternary alluvial fill in the basin consists of Holocene to Pleistocene alluvial fan and fluvial (stream) deposits, as well as lacustrine (lake) and playa (ephemeral lake) deposits. These deposits consist of gravel, sand, silt and clay. In general, coarser alluvial fan deposits are expected near the valley edges and grade into finer distal fan deposits that interfinger with fine grained lacustrine and playa deposits near the center of the basin. These deposits are typically heterogeneous, with respect to their compositional makeup and water transmitting properties. Valley axial drainages tend to be more uniform and continuous, and contain a greater proportion of sand and fine gravel. Portions of the basin are also occupied by aeolian (wind-blown) sand deposits, but the identified aeolian deposits occur at the ground surface and are of limited thickness. Therefore, they are not believed to be an important water bearing unit (BLM, 2011).

The Quaternary sediments include the Pleistocene-age Pinto Formation, which consists of coarse fanglomerate (cemented, consolidated or semi-consolidated alluvial fan gravels) containing boulders and lacustrine clay with some interbedded basalt. AECOM (2010), as cited in the CEC FSA, did not report the estimated thickness of the Quaternary Alluvium but suggested the thickness of saturated sediments beneath the site is at least 560 feet and that saturated sediments to a depth of 758 feet consisted of a mixture of fine-grained sands with interbedded silt and clay layers. AECOM suggested that these sediments are likely to be the older alluvium/Bouse Formation sediments described in Bulletin 91-7.

Pliocene Bouse Formation. The Pliocene Bouse Formation underlies the Quaternary sediments. The Bouse Formation includes a marine to brackish-water estuarine sequence deposited in an old arm of the Gulf of California during its earlier stages of geologic development. This formation has alternatively been interpreted as, or may include, lacustrine sediments deposited in a closed, brackish basin. The Bouse Formation is reported widely in the Colorado Valley and tributary basins in southeastern California and descriptions of this formation come from occurrences outside of Chuckwalla Valley. It is reported to be composed of a basal limestone overlain by interbedded clay, silt, sand, and tufa. The top of the Bouse Formation is relatively flat lying with a reported dip of approximately 2 degrees south of Cibola. The Bouse Formation in the CVGB is estimated to extend to approximately 1,900 feet below the ground surface beneath the site based on geophysical modeling. These unconsolidated to semi-consolidated sediments are reported to yield several hundred gallons per minute (gpm) to wells perforated in coarse grained units (BLM, 2011).

Miocene Fanglomerate. The Bouse Formation is unconformably underlain by a fanglomerate composed chiefly of angular to subrounded and poorly sorted partially to fully cemented pebbles with a sandy matrix. The Fanglomerate is likely Miocene-age; however, it may in part be Pliocene-age. The Fanglomerate represents composite alluvial fans built from debris shed from the mountains towards the valley, with the debris of the Fanglomerate likely representing an erosional stage in the wearing down of the mountains following the pronounced structural activity that produced the basin and range topography in the area. Bedding surfaces generally

dip from the mountains towards the basin. The Fanglomerate reportedly dips between 2 and 17 degrees near the mountains due to structural warping. The amount of tilting indicates a general decrease in structural movements since its deposition. The Fanglomerate is estimated to extend to approximately 2,600 feet bgs (-2,000 feet msl) beneath the site based on geophysical modeling by Worley-Parsons in 2009.

Bedrock. Bedrock beneath the site consists of metamorphic and igneous intrusive rocks of pre-Tertiary age that form the basement complex. In some areas of the basin, volcanic rocks of Tertiary age overlie the basement complex. These rocks are considered non-water bearing. The bedrock topography in the study area, as interpreted by modeling of Bouger gravity data obtained from the USGS, is illustrated in Figure 3.19-3.

Groundwater Trends

Groundwater levels range from the ground surface to about 400 feet below ground surface (RWQCB, 2014). Groundwater contour data from 1979 shows that CVGB groundwater moves from the north and west toward the gap between the Mule and McCoy Mountains at the southeastern end of the valley. Groundwater levels were stable up to about 1963 (CDWR, 2004). The CDWR reported total groundwater extraction of 9,100 afy in 1966.

The direction of groundwater movement is not expected to have changed since 1979, but there have been changes in groundwater levels, especially localized around areas of significant extraction. For example, data from wells within the Desert Center area show a period of water level decline from the mid-1980s through the early 1990s during a period of expanded agricultural operations when combined pumping exceeded 20,000 afy, well above historic water usage for the western portion of the basin (AECOM, 2011).

The National Park Service has noted that groundwater levels in many portions of the CVGB appear to have been trending downward for several decades (BLM, 2012). Most wells in the CVGB have not been used for monitoring data such as groundwater level trends since the 1980s; however, several wells have been used to collect groundwater data for the past 25 years, and these data show that groundwater level trends have been fairly stable in the eastern CVGB, and rising slowly back towards pre-agricultural pumping groundwater levels in the western CVGB, while dropping slowly but steadily only in the central CVGB. This is illustrated in Figure 3.19-5, Basin Wide Groundwater Hydrographs, which shows hydrographs for selected wells within the CVGB from 1958 to 2009.

Wells in the area of Desert Center (Wells 4/16-32M1, 5/16-7P1, 5/16-7M1, and 5/15-12N1) generally show declines between about 1980 and the early 1990s, attributable to increased agricultural pumping. This pumping declined significantly after 1986, and local groundwater levels have recovered to approximately those of the early 1960s (AECOM, 2011). This is indicated in the recovery in the early 1990s for Wells 5/16-7P1, 5/16-7M1, and 5/15-12N1 (Figure 3.19-5). The groundwater water level at and north of the area of the Palen Solar Project (see Wells 4/17-6C1, 5/17-19Q1 and 5/17-33N1 in Figure 3.19-5) has been generally stable over the last 40 years with slight declines.

The well data is not continuous. For instance, the graph for Well 5/17-33N1 (Figure 3.19-5) appears to show a slight but steady decline from about 1970 to 2009. However, there are no

reference points between those dates, and it is possible that most or all of that decline occurred in response to the high agricultural extractions in the mid-1980s to the early 1990s. As the Desert Center wells show an upward trend after the agricultural extractions ended, it is possible that groundwater in the area of the Palen Solar Project will slowly recover.

Well 7/20-18H1 in the eastern part of the basin shows a decrease in water level elevation between 1985 and 1990, likely due to increased water use at during the construction of the Chuckwalla Valley and Ironwood Prisons (CEC, 2010), while Well 7/18-14H1, also in the eastern part of the basin, shows an increase in groundwater level between about 1985 and 2000.

It is noteworthy that many of the long-term monitoring wells in the CVGB are situated in the vicinity of agricultural or prison operations, complicating extrapolation of any local drawdowns shown in those data to the 940-square-mile CVGB as a whole due to the site-specificity of those wells' cones of depression. A "cone of depression" refers to the drawdown in the groundwater surface which occurs when a well is pumped, causing the creation of a conical-shaped gradient in the surrounding groundwater surface that results from water flowing from areas of high to low pressure; when two or more cones of depression intersect each other, the effect on drawdown (increasing depth to groundwater) is combined and water table levels can drop substantially (BLM, 2012).

In general, the data show a relatively stable groundwater surface, interrupted locally in the past mainly by periods of mining and agricultural pumping. Local groundwater levels show evidence that water levels began to recover after the mining- and agriculture-related pumping of the 1980s was reduced.

The groundwater level trends derived from the available data show a general trend toward regaining stability, but the analysis is inconclusive because the data are not complete, there are gaps in the record, and well locations do not cover the entire CVGB. The monitoring wells that show the most prominent historic declines are in agricultural or prison areas where a local drawdown would occur from intense use, but would not necessarily be representative of the CVGB as a whole. For instance, Wells 546 and 500, which are outside the main areas of extraction, show a steady or rising water surface.

Groundwater Recharge

Recharge to the CVGB occurs from subsurface inflow from other groundwater basins, infiltration of precipitation, irrigation return flow, and wastewater return.

Subsurface Inflow

Subsurface inflow originates from the Pinto Valley and Orocopia Valley groundwater basins, which are west of the CVGB. Although the California Department of Water Resources has hypothesized that underflow from the Cadiz Valley Groundwater Basin may enter the CVGB (CDWR, 2004), Cadiz Valley and Ward Valley Groundwater Basins are not considered to contribute to the CVGB.

The amount of inflow from the Pinto Valley and Orocopia Valley Groundwater Basins is uncertain, and there have been a wide range of estimates from different experts. The results of

several preliminary evaluations on CVGB recharge from subsurface inflow are shown in Table 3.19-1.

Table 3.19-1. Subsurface Inflow Recharge Estimates for the Chuckwalla Valley Groundwater Basin

Study	Recharge from Inflow from the Pinto Valley and Orocopia Valley Groundwater Basins (acre-feet per year)
Genesis Solar Project EIS[1]	3,500
Eagle Mountain Draft EIS[1]	6,700
Palen Solar Project EIS[1]	3,500
National Park Service (NPS)[2]	953 – 1,906
Argonne National Laboratory[3]	1,595

1 - Source: BLM, 2010
2 - Source BLM, 2012
3 - Source: Argonne, 2013

The California Energy Commission (CEC, 2015) reported an estimated inflow of 3,173 afy from the Pinto Valley Groundwater Basin, and 1,700 afy from the Orocopia Groundwater Basin. CEC also reported that recent studies by GeoPentech estimated the inflow from the Orocopia Groundwater Basin as low as several hundred afy. The CEC therefore used 3,500 afy as an estimate for the total inflow into the CVGB in analyzing the Palen Solar Power Project. The NPS estimate was based in part on extrapolation of groundwater modeling results presented by the U.S. Geological Survey (USGS) in 2004 on the Warren, Joshua Tree, and Copper Mountain groundwater basins to the CVGB. These basins are nearby but not adjacent to the CVGB, and the groundwater model used is subject to a high level of uncertainty due to simplified assumptions and model inputs. Nevertheless, the NPS estimate compares well to the estimate reported by Argonne. The Eagle Mountain estimates were based on a 1996 report on environmental impacts of the Eagle Mountain Landfill.

Overall, there is substantial uncertainty regarding inflow from the adjacent groundwater basins. For purposes of this analysis, the groundwater budget uses the 3,500 afy used in the Palen Solar Power Project EIS. This estimate has been used for several projects in the past, and it is more recent than the Eagle Mountain Estimate. Additionally, it is approximately in the middle of the range of estimates given in Table Z-1. The analysis herein also applies the NPS low estimate of 953 afy to provide a probable range for the groundwater budget given the uncertainties involved.

Recharge from Precipitation

Infiltration recharge to the CVGB by precipitation is difficult to assess due to lack of reliable data and the aridity of the area. There has been a wide range of estimates by experts in support of other projects or agencies. The CDWR has not published an estimate.

Generally, precipitation recharge has been estimated as a percentage of total precipitation. The CVGB receives annually about 258,000 afy total rain (CEC, 2015). Most analysts note that previous evaluations published by the BLM indicate that 7 to 8 percent of the precipitation that falls on the bedrock mountain fronts ends up as groundwater recharge (BLM, 2012), while a smaller percentage of the valley floor precipitation makes it to the groundwater. For the CVGB,

7 to 8 percent of the precipitation that falls on the mountain fronts would be equivalent to 3 percent of the total precipitation that falls on the total CVGB watershed (BLM, 2012). The CEC, using estimates of 3, 5 and 7% of total incident precipitation ending up as groundwater recharge, and overlaying isohyetal precipitation maps over the entire CVGB watershed to estimate precipitation distribution and bedrock characteristics by sector, estimated precipitation-related recharge to be 8,588, 14,313, and 20,038 afy, respectively, and recommended using 8,588 afy (about 3% of total precipitation) for the groundwater budget analysis (CEC, 2015). A study presented in a USGS report on groundwater recharge in the arid and semiarid southwestern United States (USGS, 2007); gave a range of approximately 3 to 7 percent of total precipitation for the Mojave Desert, depending on the amount of precipitation received. In the 2007 study by the USGS, the lower (3 percent) estimate represented years with below-average precipitation, with the higher (7 percent) estimate for above-average precipitation. The percentage changes with the amount of precipitation because most recharge occurs from runoff, and runoff is generally higher in years with greater precipitation.

The results of several preliminary evaluations on CVGB recharge from precipitation are shown in Table 3.19-2.

Table 3.19-2. Precipitation Recharge Estimates for the Chuckwalla Valley Groundwater Basin

Study	Recharge from Precipitation (acre-feet per year)
Desert Harvest Solar Project EIS[1]	9,448
Eagle Mountain Draft EIR[1]	5,500
Palen Solar Project RSA[2]	8,588
Eagle Mountain Draft EIS[1]	6,125
National Park Service (NPS)[1]	2,060–6,125
Argonne National Laboratory[3]	3,200

1 - Source: BLM, 2012
2 - Source: CEC, 2010
3 - Source: Argonne, 2013

The NPS evaluation in Table 3.19-2 was based in part on extrapolation of groundwater modeling results presented by the U.S. Geological Survey (USGS) in 2004 on the nearby Warren, Joshua Tree, and Copper Mountain groundwater basins to the CVGB, as described above. Similar to the other groundwater inflow-outflow estimates presented herein, these results are subject to a high level of uncertainty due to simplified assumptions and model inputs, and the fact that the modeled basins are not adjacent to the CVGB. The results of the study were extrapolated to the CVGB, which was not studied directly (BLM, 2012).

The Palen Solar Project and Genesis Solar Project estimates were based on a percentage of precipitation entering groundwater extrapolated from a study of groundwater basins in nearby desert basins which estimated recharge rates from 3 to 5 percent of total precipitation. The Argonne estimate is based on a reported recharge rate for the adjacent Palo Verde Mesa Groundwater Basin extrapolated to the CVGB.

GEI consultants, in a study conducted in response to NPS comments on the Eagle Mountain Pumped Storage Project (FERC, 2012) used the Maxey-Eakin method of modeling natural

groundwater recharge rates, and a Metropolitan Water District (MWD) Review panel method. The Maxey-Eakin method predicted total recharge values from 600 to 3,100 afy, while the MWD Review Panel method predicted recharge ranging from 7,600 to 17,700 afy. GEI concluded that the MWD Review Panel method was the more reliable for the reason that the Maxey-Eakin method has been found to underestimate recharge rates.

As noted by the NPS in the Desert Harvest WSA (BLM, 2012), the USGS cautioned the annual streamflow runoff recharge rates simulated by the USGS (2004) in its groundwater modeling study may be two to ten times greater than the actual streamflow runoff recharge measured and reported by the USGS in the same study, suggesting that the USGS recharge rates may be as low as one tenth to one-half those given in Table 3.19-2, or only 206 to 3,062 afy. These lower estimates would be closer to those estimated by the Maxey-Eakin method. Recharge rates that low would mean that one percent or less of total precipitation goes to groundwater recharge, well below the 3 to 7 percent published later by the USGS (2007).

In summary, there is high uncertainty regarding the amount of precipitation-related recharge to the CVGB, and substantial disagreements among experts, with estimates presented herein ranging from 2,060 afy to 9,448 afy, and possibly even lower, or higher. For purposes of this analysis, the groundwater budget uses 8,588 afy. This is equivalent to 3.3 percent of the total average precipitation of 258,000 af, and is supported by the USGS 2007 study for which 3 percent would represent the estimated recharge for a below-average precipitation year. The analysis also applies the NPS low estimate of 2,060 afy, representing about (0.8 percent of average annual precipitation) to provide a probable range for the groundwater budget given the uncertainties involved.

Irrigation Return Recharge

Irrigation water applied to crops within the CVGB has the potential to infiltrate to groundwater depending on the amount and method of irrigation, soils, crop type, and climate. The CEC estimated irrigation return recharge as 10% of total irrigation volume as determined by a 2010 study (WorleyParsons, 2009), and determined that 800 afy would reach the CVGB (CEC, 2010). This was based on a total irrigation volume of 7,700 afy (6,400 afy for agriculture, 215 afy for aquaculture pumping, and 1,090 afy for Tamarisk Lake).

Wastewater Return Flow

Wastewater return flow within the CVGB originates from the Chuckwalla State Prison, the Ironwood State Prison, and the Lake Tamarisk development near Desert Center (CEC, 2010, WorleyParsons, 2009). The prisons use an unlined pond to dispose of treated wastewater, and it is estimated that 795 afy infiltrates to the CVGB (WorleyParsons, 2009). Another 36 afy is estimated to originate from Lake Tamarisk, for a total of 831 afy (WorleyParsons, 2009).

Groundwater Demand/Outflow

Outflow from the CVGB occurs from subsurface outflow to the Palo Verde Mesa Groundwater Basin, groundwater extraction for agriculture and other uses, and evapotranspiration from Palen Dry Lake. Outflow also occurs, or will occur, from the Project and other existing and proposed projects that are addressed in Section 5 of this document.

Subsurface Outflow

Subsurface outflow from the CVGB is to the Palo Verde Mesa Groundwater Basin, and has been variously estimated as ranging from 400 afy to 1,162 afy. Argonne (Argonne, 2013), in their 2013 study of the basin, assumed zero subsurface outflow, with no justification given. Using gravity data, Wilson and Owens-Joyce (1994) found that the area through which discharge occurs is significantly more limited than previously thought due to the presence of a buried bedrock ridge, though the discharge pathway was not indicated to be completely closed.

Since this discovery was made after the 1,162 afy estimate was made (which was in 1990), the lower estimate of 400 afy outflow was adopted for this study.

Groundwater Extraction

Current and historical groundwater extraction in the CVGB includes agricultural water use, pumping for Chuckwalla and Ironwood State Prisons, pumping for the Tamarisk Lake development and golf course, domestic pumping, and a minor amount of pumping by Southern California Gas Company (CEC, 2010). The California Department of Water Resources, using data from 2005 to 2010, estimated the total amount of pumping at 4,700 afy for the entire CVGB (CDWR, 2015). Argonne (Argonne, 2013), also using California Department of Water Resources data, estimated 5,100 afy. Other recent studies have given higher estimates. Specifically, the Palen Solar Power Project EIS and CEC staff assessment for the Palen Solar Power Project, both used 10,361 afy (BLM, 2011, CEC, 2010). AECOM, in a previous WSA for the Palen Solar Power Project (AECOM, 2010) estimated 5,745 to 7,415 afy, with no source given. For purposes of this analysis, the estimate of 10,361 afy is used as a reasonable upper estimate of total extraction, as was used by the BLM and CEC.

The Genesis Solar Electric Plant and the First Solar Desert Sunlight Solar Farm have been recently completed in the area, and these projects will use 218 afy groundwater (218 afy for Genesis, and 0.3 afy for First Solar, with the total rounded to 218). Total baseline groundwater extraction is therefore 10,579 afy for purposes of this study.

Evapotranspiration at Palen Dry Lake

USGS mapping of groundwater flow in the area did not identify Palen Dry Lake as an area where groundwater discharges at the ground surface. Nevertheless, groundwater elevation contour mapping suggests that groundwater may occur near the ground surface beneath approximately the northwestern 25% of Palen Dry Lake. Groundwater levels measured in a nearby well were reported to be approximately 20 to 25 feet below the ground surface between 1932 and 1984. Given that the surface elevation at Palen Dry Lake 2 miles to the south is approximately 460 feet msl, or 40 feet lower, it is possible that groundwater levels are very close to the ground surface beneath the northern portion of the playa (CEC, 2010). Data summarized by the CEC (CEC, 2010) suggest it is possible that part of the northern portion of Palen Dry Lake is discharging groundwater by evaporation as a wet playa.

The presence of groundwater-dependent vegetation along the margins of Palen Dry Lake is another indicator that groundwater may be lost through evapotranspiration. There are mesquite tree groves along the margins of Palen Dry Lake, woodland habitat along dry desert washes, stands of jackass clover, and desert/alkali sink scrub habitats along the margins of the dry lake.

The mesquites can be phreatophytes with deep roots that tap into shallow groundwater, but do not necessarily require groundwater to survive. A groundwater depth of 20 to 25 feet would be well within the reach of mesquite tap roots. The presence of this vegetation is an indicator, but not necessarily proof, that evapotranspiration is occurring.

Worley-Parsons visited the Palen Dry Lake in December of 2009 and found intermittent salt deposits at the northwestern portion of the dry lake. The salt deposits were concluded to have been formed from evaporation of accumulated surface water rather than from groundwater. In additional studies of aerial photographs by Worley-Parsons, a 700-acre salt pan was indicated at the northwest portion of the dry lake. The salt pan could be evidence of evaporation of groundwater. Review of historical imagery found that the occurrence of the salt pan was episodic, and apparently correlated with precipitation events, which could also be responsible for the salt deposits.

In December 2009, Worley-Parsons, using hand-augur borings, found free groundwater at a depth of 8 feet below the ground surface at the Palen Dry Lake. This suggests that groundwater could be close enough to rise through capillary action and be lost through evaporation.

Salt accumulation at Palen Dry Lake is likely the result of the dissolution and recrystallization of surface salt deposits in response to surface accumulation by rains, although intermittent accumulation from evaporation may occur seasonally. This, plus the proximity of groundwater to the surface in some areas, and the presence of possible phreatophytes, indicates that groundwater loss through evapotranspiration may occur at least episodically and seasonally.

The CEC estimated groundwater discharge rates from the Palen Dry Lake using measured evaporation rates at Franklin Lake Playa in Death Valley, adjusted for differences in the characteristics of the two dry lakes, as a reference. The result was 0.0583 feet of evapotranspiration per month, for three months of the year. Over the 2,000-acre area thought susceptible to groundwater evapotranspiration, this amounts to 350 afy.

The CEC estimate should be considered a rough approximation, as it was made based on data extrapolated from a Death Valley dry lake with very different characteristics than the Palen Dry Lake. For instance (from CEC, 2010):

- Franklin Lake Playa is a terminal playa, which is the terminal discharge point of the local groundwater flow system; whereas, Palen Lake is a bypass playa, with most groundwater flowing laterally past the playa.
- Franklin Lake Playa includes extensive groundwater discharge features (e.g., saltpan, puffy ground and halophyte wetlands) that are generally less developed or lacking at Palen Lake, indicating less groundwater discharge would be expected at Palen Lake.
- Evapotranspiration rates at wet playas are temperature dependent, with maximum rates occurring during the summer months. Franklin Lake Playa occurs in Death Valley, where mean annual and summer high temperatures typically exceed those at Palen Lake.
- The available data suggest that groundwater discharge, if it is occurring at Palen Lake, is episodic or intermittent; whereas groundwater discharge at Franklin Lake Playa occurs throughout the year.

To compensate for these differences, the CEC used a groundwater discharge rate that was approximately half the Franklin Lake Playa rate. Additional analysis of the Palen Dry Lake would be needed to obtain a more-reliable estimate.

Baseline Groundwater Budget

The baseline groundwater budget is the groundwater budget for the CVGB in the absence of the Proposed Action and all other known cumulative projects not already in place. For the purposes of this analysis, agricultural uses are considered as part of the baseline budget, as is the Prison Water Use, and the Genesis Solar Project. There are no industrial water uses in the area.

Table 3.19-3 provides a baseline groundwater budget for the CVGB based on the adopted inflow/outflow information presented above. This budget attempts to provide an estimate of the safe yield for the basin, which is the maximum quantity of water that can be continuously withdrawn from a groundwater basin without adverse effect. The baseline safe yield for the CVGB is estimated at 2,390afy (Budget Balance from Table 3.19-3), meaning the basin is currently close to capacity in terms of sustainable groundwater extraction. This budget would be for a normal (average) year, in terms of precipitation and water use.

Table 3.19-4 provides the same analysis using the lower NPS estimates of precipitation and underflow recharge described in Section 3.19.2.2. This baseline budget shows the CVGB to be in deficit, with a loss of approximately 6,685 afy in the groundwater resource, meaning groundwater levels would be expected to drop as the resource is depleted over the years.

Colorado River Accounting Surface

The USGS, in a 2009 update to the Colorado River Accounting surface (USGS, 2009) gave the Colorado River Accounting Surface elevation in the CVGB in the area of the Palen Solar Project as 238 to 240 feet above mean sea level. According to Figure 3.19-5, groundwater levels in the area of the Project are at least 150 feet above that level, meaning the Project will not likely draw water from below the accounting surface.

Table 3.19-3. Estimated Baseline Groundwater Budget for the Chuckwalla Valley Groundwater Basin

Budget Components	Acre-Feet per Year
Inflow	
Recharge from Precipitation	8,588
Underflow from Pinto Valley and Orocopia Valley Groundwater Basins	3,500
Irrigation Return Flow	800
Wastewater Return Flow	831
Total Inflow	13,719
Outflow	
Groundwater Extraction	–10,579
Underflow to Palo Verde Mesa Groundwater Basin	–400
Evapotranspiration at Palen Dry Lake	–350
Total Outflow	–11,329
Budget Balance (Inflow – Outflow)	2,390 (+ 0.02% of total storage)

Table 3.19-4. Estimated Baseline Groundwater Budget for the Chuckwalla Valley Groundwater Basin Using NPS Estimates of Precipitation and Subsurface Inflow.

Budget Components	Acre-Feet per Year
Inflow	
Recharge from Precipitation	2,060
Underflow from Pinto Valley and Orocopia Valley Groundwater Basins	953
Irrigation Return Flow	800
Wastewater Return Flow	831
Total Inflow	4,644
Outflow	
Groundwater Extraction	–10,579
Underflow to Palo Verde Mesa Groundwater Basin	–400
Evapotranspiration at Palen Dry Lake	–350
Total Outflow	-11,329
Budget Balance (Inflow – Outflow)	–6,685 (–0.04% of total storage)

Groundwater Quality

Groundwater quality is variable throughout the basin. Groundwater in the western portion of the basin near Desert Center generally contains lower concentrations of total dissolved solids (TDS) than groundwater in the eastern, downgradient portion of the basin near Ford Dry Lake. Groundwater to the south and west of Palen Lake is typically sodium chloride to sodium sulfate-chloride in character. The detected concentrations of TDS in the basin range from 274 mg/L to 8,150 mg/L with an average concentration of 2,100 mg/L. In general, the groundwater in the basin has concentrations of sulfate, chloride, fluoride, and dissolved solids too high for domestic use and concentrations of sodium, boron and dissolved solids too high for irrigation use. Several of the wells sampled in the basin contain high levels of fluoride and boron. [PA/FEIS Section 3.20.1]

A total of 88 water supply wells were identified in online databases in the CVGB (Appendix J of Solar Millennium, 2009a). A field survey was conducted by AECOM (Solar Millennium, 2009a) in July 2009 to identify well locations, confirm operational status, and estimate uses within the basin. The wells were categorized as either domestic, industrial, agricultural or municipal wells based on land use or information provided by the property owner. [PA/FEIS Section 3.20.2]

A total of 15 wells were identified, most of which supported historic agricultural operations and many of which have been discontinued. Available information for water supply wells located within a one-mile radius of the project site is summarized in Table 3.19-5. [PA/FEIS Section 3.20.2]

Table 3.19-5. Summary of Groundwater Quality Data

Analyte	Well 5/17-33N1 (2009)(592)	Well 5/17-20F1 (May 1957)	Well 5/17-30F1 (January 1960)	Well 5/17-30P1 (October 1958)	All Chuckwalla Valley Wells[1]
Arsenic	0.0157	—	—	—	—
Bicarbonate (HCO_3)	122	104	90	420	21–1,950
Boron	1.82	0.0001	0.0006	0.0004	—
Calcium	31	50	30	12	5–585
Carbonates (Co_3)	ND[2]	ND	ND	ND	0–129
Fluoride	6.1	1.8	—	0.3	0–12
Chloride	200	203	225	150	8–2,780
Iron	ND < 0.1	—	—	—	—
Magnesium	4.72	6		2	0–208
Manganese	0.0127	—	—	—	—
Nitrate (No_3)	0.173[3]	—	—	—	—
Selenium	ND < 0.015	—	—	—	—
Sodium	352	225	240	240	2–6,720
Sulfate	380	241	155	89	9–1,110
Total Hardness ($CaCo_3$)	830	150	75	38	3–2,300
TDS	1,010	803	695	783	274–12,300
pH (units)	—	7.4	8.1	8	7–8.7

Note: mg/L = milligrams per liter; ND – not detected at the practical quantitation limit. All values in mg/L unless otherwise indicated
1 - Geochemical data for all wells within the Chuckwalla Groundwater Basin from available information in online databases and historic reports is provided in Solar Millennium 2009.
2 - Metals data reported from the unfiltered ("total") sample
3 - Nitrate as Nitrogen
Source: PA/FEIS Section 3.20.2

3.19.2.3 Surface Water

Hydrology and Flooding

The Palen Solar Project is located within the Chuckwalla Valley Drainage Basin. There are no perennial streams in this drainage basin, which is internally drained. All surface water flows to Palen Dry Lake in the western portion of the valley and Ford Dry Lake in the eastern portion of the valley. Palen Dry Lake is a "wet playa" with possibly a moderate amount of shallow groundwater discharge at the ground surface by evaporation; whereas, Ford Dry Lake is a "dry playa," with groundwater occurring well below the ground surface. Palen Dry Lake is in the central portion of Chuckwalla Valley about one mile north of the project site (BLM, 2011).

Off-site stormwater flows impacting the site are from the Corn Springs Wash watershed area to the west and south, which covers approximately 44 square miles (Figure 3.19-6. Note that this figure, from the BLM Final EIS, (BLM, 2011b), shows a previous version of the site plan). Peak discharge rates for Drainage Areas QA, QB, and QC in Figure 3.19-6, are estimated at 12,435 cubic feet per second (cfs), 3,994 cfs, and 2,686 cfs, respectively, for the 100-year return period flood (CEC, 2010). These three concentration points are roughly in the locations shown for QA,

QB, and QC in Figure 3.19-6. All flows must pass beneath bridges on the I-10 freeway, and are therefore concentrated at three main discharge points just upstream of the Palen Solar Project.

The Corn Springs Wash being an alluvial fan, the distribution of flows is subject to change over time, and even from flood to flood. There are constructed berms intended to guide flows to the main concentration points on the freeway, but these berms are likely not structurally stable, and there appears to be several breaches clearly visible on aerial photographs. The distribution of discharges is therefore subject to change. Based on aerial photography and topographic mapping it is unlikely Corn Springs Wash flows would overflow to Concentration Point QC, it should be expected that QA and QB are both subject to 100-year peak discharge rates of approximately 12,400 cfs.

FEMA flood insurance rate maps have not been prepared for the project site or surrounding lands and the site does not lie within a federally mapped floodplain. However, the site is clearly subject to flooding due mainly to the presence of the Corn Springs Wash and the three concentration points. No numerical floodplain analysis was available for this impact analysis, but a rough estimate of the extent of the floodplain can be obtained from aerial photography.

Aerial photography shows that the major flow concentrations crossing the freeway just upstream of the property separate and spread into a series of small, braided, unconsolidated channels. The closest proximity of a freeway concentration point to the Palen Solar Project property is QB in Figure 3.19-6. This bridge, which is approximately 90 feet wide in the direction of flow, crosses I-10 approximately 760 feet upstream of the project boundary. Downstream of the bridge the braided channels spread to a width that in the aggregate is approximately 650 feet wide at the property boundary, meaning the flood-prone area at that location is at least 650 feet wide. These unconsolidated channels have the potential to overflow and shift location during floods. None are more than about 12 feet wide at the point of entering the property. Flow at Concentration Point QA spreads in a similar manner and enters the property about 1.25 miles downstream of the freeway. At the point of entering the property, the visible unconsolidated flow path is approximately 1,700 feet wide, implying a similar floodplain width. The same goes for Concentration Point QC which implies a probable floodplain width of about 650 feet at the point of entering the property.

Flow depths are likely relatively shallow due to the absence of defined confining channel banks. Using the assumption of critical depth, a discharge of 12,435 cfs spread over a width of 650 feet would be approximately 2.25 feet deep and flowing approximately 8.5 feet per second. Although deeper depths and higher velocities are possible, it is likely most flood-prone areas on the Palen Solar Project would experience shallower depths.

The extent of probable flooding widens as the flow moves from south to north across the property, and the small braided channels lose definition. At the point of exit along the north and east boundary of the project property, the floodplain is likely much wider than the aggregate 3,000 feet for the three concentration points entering the property, with much shallower depths. An accurate estimate of floodplain limits, flow depths, and velocities would depend on a numerical analysis using two-dimensional modeling procedures.

All of the drainage that affects the Palen Solar Project is ephemeral, activated by rainfall only. The area is very arid, and the washes are dry most of the time. There are springs and seeps within

the area of the Chuckwalla Valley, but none are so situated as to have any effect on the Project. The nearest is Corn Springs, located approximately 5 to 6 miles southwest of the project site in the center of the Chuckwalla Mountains. The spring discharges into Corn Spring Wash, an ephemeral dry wash where surface water flows towards the northeast and onto the project site. Corn Spring appears to derive its water from precipitation falling onto the Chuckwalla Mountains, and movement of groundwater under pressure along an historic fault that bisects the mountains (CEC, 2010).

3.19.2.4 Beneficial Uses

Overview

The water quality control plan (or "Basin Plan") of the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) establishes water quality objectives, including narrative and numerical standards that protect the beneficial uses of surface and groundwaters in the region. The Basin Plan describes implementation plans and other control measures designed to ensure compliance with Statewide plans and policies and documents comprehensive water quality planning.

Beneficial water uses are of two types: consumptive and non-consumptive. Consumptive uses are those normally associated with people's activities, primarily municipal, industrial and irrigation uses that consume water and cause corresponding reduction and/or depletion of water supply. Non-consumptive uses include swimming, boating, waterskiing, fishing, hydropower generation, and other uses that do not significantly deplete water supplies.

Historical beneficial uses of water within the Colorado River Basin Region have largely been associated with irrigated agriculture and mining. Industrial use of water has become increasingly important in the Region, particularly in the agricultural areas.

Agricultural use is the predominant beneficial use of water in the Colorado River Basin Region, with the major irrigated acreage being located in the Coachella, Imperial and Palo Verde Valleys. The second in quantity of usage is the use of water for municipal and industrial purposes. The third major category of beneficial use, recreational use of surface waters, represents another important segment of the Region's economy.

Specific Beneficial Uses

The RQQCB Basin Plan (RWQCB, 2014) lists specific beneficial uses for specific surface waters and groundwater. The surface waters on the Palen Solar Project site would be classified as washes (ephemeral streams) for which beneficial uses are:

- Groundwater Recharge (GWR),
- Non-Contact Water Recreation (REC II),
- Warm Freshwater Habitat (WARM) (to be established on a case-by-case basis), and
- Wildlife Habitat (WILD).

Beneficial uses of the CVGB are:

- Municipal and Domestic Supply (MUN),
- Industrial Service Supply (IND), and
- Agriculture Supply (AGR).

Sources of Drinking Water Policy

All surface and groundwaters are suitable, or potentially suitable, for municipal or domestic water supply with the exception of (BLM, 2011):

- Surface and groundwaters where: the total dissolved solids (TDS) exceed 3,000 mg/L, and it is not reasonably expected by the Regional Board to supply a public water system; or,
- there is contamination, either by natural process or by human activity, that cannot be treated for domestic use using either Management Practices or best economically achievable treatment practices; or,
- The water source does not provide sufficient water to supply a single well capable of producing an average, sustained yield of 200 gallons per day.

Existing uses of waters from springs in the Colorado River Basin include the Box Spring, Crystal Spring, Old Woman Spring, Cove Spring, Mitchell Caverns Spring, Bonanza Spring, Agua Caliente Spring, Kleinfelter Spring, Von Trigger Spring, Malpais Spring, and Sunflower Spring. Based on a review of available information include the USGS NWIS database, USGS quadrangle maps and data provided by the BLM, none of these springs are within the area that would be influenced by the Project. Existing uses of water from springs in the Colorado River Basin include Bousic Spring, Veale Spring, Nett Spring, Gordon Spring, and Arctic Canyon Spring. [PA/FEIS Section 3.20.3] None of these springs are within the area that would be influenced by the Project.

RWQCB General Surface Water Objectives

The RWQCB General Surface Water Objectives are (BLM, 2011):

Aesthetic Qualities. All waters shall be free from substance attributable to wastewater of domestic or industrial origin or other discharges which adversely affect beneficial uses not limited to: setting to form objectionable deposits; floating as debris, scum, grease, oil, wax, or other matter that may cause nuisances; and producing objectionable color, odor, taste, or turbidity.

Tainting Substances. Waters shall be free of unnatural materials which individually or in combination produce undesirable flavors in the edible portions of aquatic organisms.

Toxicity. All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in human, plant, animal, or indigenous aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, 96-hour bioassay or bioassays of appropriate duration or other appropriate methods as specified by the RWQCB. Effluent limits based upon bioassays of effluent will be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data to become

available, and source control of toxic substances will be encouraged. The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge, or other control water which is consistent with the requirements for "experimental water" as described in Standards Methods for the Examination of Water and Wastewater.

Temperature. Temperature shall not be altered.

pH. pH shall range from 6.0 to 9.0.

Dissolved Oxygen. Shall not be reduced below the following minimum levels at any time: warm – 5.0 mg/L, cold – 8.0 mg/L, and warm and cold – 8.0mg/L

Total Dissolved Solids. Discharges of wastes or wastewater shall not increase the total dissolved solids content of receiving waters, unless it can be demonstrated to the satisfaction of the Regional Board that such an increase in total dissolved solids does not adversely affect beneficial uses.

Bacteria. The geometric mean of the indicated bacterial densities should not exceed one or the other of the following: E. coli – 630 colonies (col) per 100 ml and enterococci – 165 col per 100 ml. Nor shall any sample exceed one other following maximum allowable: E. coli 2000 col per 100 ml and enterococci 500 col per 100 ml.

Any discharge from the Coachella Valley and Palo Verde Valley Drains, except from agriculture, shall not cause concentration of total dissolved solids (TDS) in surface waters to exceed an annual average of 2,000 milligrams per liter (mg/L) and a maximum of 2,500 mg/L

RWQCB General Groundwater Objectives

Establishment of numerical objectives for groundwater involves complex considerations and it is acknowledged that the quality of groundwater varies significantly throughout the CVGB and varies with depth. It is the RWQCB's goal to maintain the existing quality of non-degraded groundwater basins and to minimize the quantities of contaminants reaching any groundwater basin (BLM, 2011).

- Groundwater designated for domestic or municipal supply shall not contain taste or odor producing substances.
- Groundwater designated for domestic or municipal supply shall not contain coliform organisms in excess of limits specified in the regulations.
- Groundwater designated for domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the limits specified in California Code of Regulations, Title 22 regulations.
- Discharges of water softeners regeneration brines, other mineralized wastes, and toxic wastes to disposal facilities which ultimately discharge in areas where such waste can percolate to groundwater usable for domestic and municipal purposes, are prohibited.

Wastewater reclamation and reuse is encouraged; however, such use must meet applicable water quality standards.

3.20 Wildland Fire Ecology

The analyses of impacts on wildland fire ecology for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.14, Worker Safety and Fire Protection (CEC, 2010, pages C.14-17 through C.14-27).
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.22 Wildland Fire Ecology (BLM, 2011).

The affected environment and regulatory information presented in the documents listed above was reviewed and determined to still be current and accurate for analysis of impacts to wildland fire ecology. It is repeated or summarized in this section. No additional information has been incorporated into the description of the affected environment.

3.20.1 Regulatory Framework

Federal

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) requires utilities to adopt and maintain minimum clearance standards between vegetation and transmission voltage power lines. These clearances vary depending on voltage. In most cases, however, the minimum clearances required in state regulations are greater than the federal requirement. In California, the Public Utilities Commission (CPUC) has adopted CPUC General Order 95 (described below), rather than the North American Electric Reliability Corporation (NERC) Standards as the electric safety standard for State-regulated utilities. Since the state regulations meet or exceed the FERC standards, the FERC requirements are not discussed further in this section, as compliance with the state requirements will ensure that the federal requirements are met.

Federal Wildland Fire Management Policy

The Federal Wildland Fire Management Policy was developed in 1995 and updated in 2001 by the National Wildfire Coordinating Group, a federal multi-agency group that establishes consistent and coordinated fire management policy across multiple federal jurisdictions. Guidance for Implementation of Federal Wildland Fire Management Policy was issued in 2009. An important component of the Federal Wildland Fire Management Policy is the acknowledgement of the essential role of fire in maintaining natural ecosystems. The Federal Wildland Fire Management Policy and its implementation guidance are founded on the following guiding principles:

- Firefighter and public safety is the first priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans, programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.

- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management objectives.
- Fire management plans and activities are based upon the best available science.
- Fire management plans and activities incorporate public health and environmental quality considerations.
- Federal, State, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

North American Electric Reliability Corporation Standards

The North American Electric Reliability Corporation (NERC) is a nonprofit corporation comprising 10 regional reliability councils. The goal of NERC is to ensure the reliability of the bulk power system in North America. To achieve its goal, the NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel. In order to improve the reliability of regional electric transmission systems and in response to the massive widespread power outage that occurred on the Eastern Seaboard, NERC developed a transmission vegetation management program that is applicable to all transmission lines operated at 200 kV and above to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the electric system in the region. The plan, which became effective on April 7, 2006, establishes requirements for the formal transmission vegetation management program, which include identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors, while taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, fire risk, line terrain and elevation, and the effects of wind velocities on conductor sway. The clearances identified must be no less than those set forth in the Institute of Electrical and Electronics Engineers Standard 516-2009 (*Guide for Maintenance Methods on Energized Power Lines*).

Institute of Electrical and Electronics Engineers Standard 516-2003

The Institute of Electrical and Electronics Engineers is a leading authority in setting standards for the electric power industry. Standard 516-2009, *Guide for Maintenance Methods on Energized Power Lines*, establishes minimum vegetation-to-conductor clearances in order to maintain electrical integrity of the electrical system.

State of California

California Fire Code

The California Fire Code is contained within Chapter 9 of Title 24 of the California Code of Regulations (CCR). Based on the International Fire Code, the California Fire Code is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. Similar to the International Fire Code, the California Fire Code and the California Building Code use a hazards classification system to determine the appropriate measures to incorporate to protect life and property.

California Health and Safety Code

State fire regulations are established in Section 13000 of the California Health and Safety Code. The section establishes building standards, fire protection device equipment standards, high-rise building and childcare facility standards, interagency support protocols, and emergency procedures. Section 13027 states that the state fire marshal shall notify industrial establishments and property owners having equipment for fire protective purposes of the changes necessary to bring their equipment into conformity with, and shall render them such assistance as may be available in converting their equipment to, standard requirements.

California Fire Plan

The California Fire Plan is the statewide plan for reducing the risk of wildfire. The basic principles of the Fire Plan are as follows:

- Involve the community in the fire management planning process
- Assess public and private resources that could be damaged by wildfires
- Develop pre-fire management solutions and implement cooperative programs to reduce community's potential wildfire losses.

One of the more important objectives of the plan regards pre-fire management solutions. Included within the realm of pre-fire management solutions are fuel breaks, the establishment of Wildfire Protection Zones, and prescribed fires to reduce the availability of fire fuels. In addition, the Fire Plan recommends that clearance laws, zoning, and related fire safety requirements implemented by state and local authorities address fire-resistant construction standards, hazard reduction near structures, and infrastructure (California Board of Forestry and Fire Protection, 2010).

CPUC General Order 95: Rules for Overhead Electric Line Construction

General Order (GO) 95 is the key standard governing the design, construction, operation, and maintenance of overhead electric lines in the State. It was adopted in 1941 and updated most recently in 2012. GO 95 includes safety standards for overhead electric lines, including minimum distances for conductor spacing, minimum conductor ground clearance, standards for calculating maximum sag, electric line inspection requirements, and vegetation clearance requirements.

Rule 31.2, Inspection of Lines, requires that lines be inspected frequently and thoroughly for the purpose of ensuring that they are in good condition, and that lines temporarily out of service be inspected and maintained in such condition as not to create a hazard.

Public Resources Code 4291

Public Resources Code 4291 provides that a person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line.

Riverside County

Riverside County General Plan

The Safety Element of the Riverside County General Plan provides for the mitigation of fire-related hazards through a combination of transportation, construction, land use, education, coordination and development standards. The Safety Element addresses the fire-related hazards present within the county, aiming to mitigate wildfire hazards, eliminate earthquake-induced fire hazards, and the reduction of long-term safety hazards related to wildfire effects, including erosion and debris flow. Riverside County has prepared graphics that identify fire-related hazards; the project site and gen-tie line alternatives do not intersect any high-risk hazards (Riverside County, 2015). Within the Riverside County General Plan, the Desert Center Area Plan identifies areas of steep slope as the riskiest areas for fire-related hazards. The Project and alternatives would occur on flat to gently sloping ground. The General Plan policies call for construction and design standards that ensure proposed development incorporates fire prevention features, monitoring fire-prevention measures through site specific fire-prevention plans, demonstrating that the development can provide fire services that meet the minimum travel times identified in the Riverside County Fire Department Fire Protection and EMS Strategic Master Plan, creating setbacks that buffer development from hazard areas, among others.

Riverside County General Plan also includes policies relating to long-range fire safety planning. These include ensuring that the Fire Department has appropriate municipal staffing and fire protection planning staff that meet the needs of development pressure and implement a regional coordination program to increase support for coordination among fire protection and emergency service providers.

Uniform Building Code (UBC) and Uniform Fire Code (UFC)

Every three years, the County's Building and Fire Codes are adapted from the Uniform Building and Fire Codes. They contain baseline minimum standards to guard against unsafe development and to ensure fire apparatus access to developments.

3.20.2 Existing Conditions

The behavior and characteristics of wildfires depend on a number of biophysical and anthropogenic (human-caused) factors. The biophysical variables are fuels (including composition, cover, and moisture content), weather conditions (particularly wind velocity and humidity), topography (slope and aspect), and natural ignition sources (particularly lightning). The anthropogenic variables are ignitions sources (including arson, smoking, campfires, and power lines) and management (wildfire prevention and suppression efforts). Existing anthropogenic ignition sources in the project area include farm equipment, and vehicles traveling on I-10 and other roads in the project area.

Wildland Fire History

Compared to other parts of the State, there are relatively few fires in the project area and most are small. In the 15 years between 1980 and 1995, a handful of fires burned a total of about 6,000 acres, all outside the project area. Most fires in the desert are caused by lightning or vehicles (BLM, 2011).

Vegetation Types and Relationship to Fire Risk

The vegetation-fuel types in the project area are not fire-adapted. They include Sonoran creosote bush scrub, desert dry wash woodland, unvegetated ephemeral dry wash, desert sink scrub, and desert dunes. Fire, particularly repeated wildfire, is harmful to these plant communities and tends to deplete the native woody shrubs that characterize and dominate these communities, allowing their replacement by exotic weedy annual plants (BLM, 2011).

Although historically infrequent in the southwestern deserts, fire has increased in both frequency and extent in recent decades, generally due to increased vegetation fuel provided by the invasion of non-native annual grasses (BLM, 2015).

Disturbed areas are more likely to support exotic annual weeds. There are two of these disturbed area types in the project area: Developed land and Agricultural land, including an existing date palm farm immediately adjacent to the Project. These land types are most likely to support or carry wildfires. The amount and extent of vehicle use and the amount and extent of disturbed areas are the primary variables in predicting changes to wildfire size and frequency (BLM, 2011).

Wildland Fire Fighting

On public lands (including all BLM-managed lands in California), wildland fire is managed through an interagency policy implemented in 1995 called the Federal Wildland Fire Management Policy (FWFMP), as updated in 2001. The Secretaries of the U.S. Department of Interior and U.S. Department of Agriculture developed the FWFMP to respond to increases in frequency, size, and catastrophic nature of wildland fires in the United States. Under the FWFMP, guidance is provided for the consistent implementation of fire policy (BLM, 2015).

In California, five federal fire management agencies and CAL FIRE have entered into an agreement called the California Master Cooperative Wildland Fire Management and Stafford Act Response Agreement (known as the CFMA). This agreement provides the framework for the mutual cooperation of the fire management agencies to suppress fires on intermingled private and public land within the state. Through this agreement and with oversight from the California Wildfire Coordinating Group, the state is divided into direct protection areas, delineated by boundaries regardless of statutory responsibility, where fire protection is assumed by administrative units of either federal or state agencies. Therefore, in some areas BLM is responsible for protecting lands other than public land, and in other areas another federal or state agency is responsible for fire suppression on public lands. Regardless of the actual responsibility for a specific area, the closest available fire suppression resources will respond to a given fire under the mutual aid agreements established in the CFMA (BLM, 2015).

The BLM Palm Springs–South Coast Field Office operates 3 firefighting facilities. These stations are BLM Pinyon station collocated with Riverside County Station 30 in the Santa Rosa and San Jacinto Mountains National Monument (over 75 miles west of the project site), the Black Rock Interagency Fire Center in JTNP (80 miles west of the project site). The Palm Springs–South Coast Field Office works cooperatively with many other federal, state and county agencies and fire departments. The CAL FIRE station in Desert Center is the closest response resource to the Project. Under the California Fire Master Agreement, the closest resource would be requested to respond until the responsible agency arrives to assume command.

All fire stations serving State Responsibility Areas and Local Responsibility Areas in Riverside County are dispatched by the CAL FIRE Riverside Unit/Riverside County Fire Department Emergency Command Center (Perris Dispatch Center) and are part of the "Integrated Fire Protection System," under contract with the State. The BLM would be notified and a response from BLM would be dispatched if the event occurred on Federal Responsibility Area lands. The Federal Interagency Communications Center, San Bernardino Dispatch, would be notified.

Closest to the Project are the Lake Tamarisk Fire Station in Desert Center (with one County paramedic assessment engine; 8 miles west of the Palen site); Blythe and Blythe Air Base in Blythe (with one County paramedic assessment engine; 50 miles east of the Project); Riverbend Volunteer Fire Department in Blythe (50 miles east of the Project; Riverside County Fire Department, 2016).

3.21 Wildlife Resources

The previous analyses of impacts on wildlife resources for previously proposed solar projects at the Palen site were presented in the following documents and sections:

- For CEQA, the 2010 Energy Commission Revised Staff Assessment (RSA) for the PSPP, Section C.2, Biological Resources (CEC, 2010).
- For NEPA, the PSPP (solar trough analysis): 2011 BLM Plan Amendment/Final EIS (PA/FEIS), Section 3.23, Wildlife Resources (BLM, 2011).

Section 3.23 of the PSPP PA/FEIS describes special status wildlife present or potentially present on the project site as it was proposed at that time (encompassing the disturbance resulting from the proposed construction of the Project, including solar fields, transmission facilities, office and maintenance buildings, lay down area, access roads, gen-tie line, and other components). This Supplemental EIS/EIR has been updated with information from recent biological surveys of the project site (Ironwood, 2016). The PSPP PA/FEIS also describes special status wildlife present or potentially present in a buffer area surrounding the project site. This buffer area is 1-mile wide for the solar facility footprint and 1,000 feet wide on either side for the gen-tie line (2,000 feet total).

3.21.1 Regulatory Framework

Several of the key federal, state, and local laws and regulations applicable to wildlife resources are identified and briefly described in Section 3.17 (Vegetation Resources). This section briefly describes additional laws and regulations applicable to wildlife resources for the Project.

Federal Regulations

Migratory Bird Treaty Act of 1918 (MBTA) (16 USC 703-711), as amended. The MBTA prohibits take of any migratory bird, including eggs or active nests, except as permitted by regulation (e.g., licensed hunting of waterfowl or upland game species). Under the MBTA, "migratory bird" is broadly defined as "any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle" and thus applies to most native bird species.

Bald and Golden Eagle Protection Act (BGEPA) (16 USC 668-668d; 50 CFR Part 22). This Act protects bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*) by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The BGEPA authorizes limited take of eagles where the take is compatible with the preservation of the species; necessary to protect an interest in a particular locality; associated with but not the purpose of the activity; and (1) for individual instances of take, the take cannot practicably be avoided; or (2) for programmatic take, the take is unavoidable even though advanced conservation practices are being implemented. 50 CFR Section 22.27 provides for the intentional removal or relocation of eagle nests in some circumstances. Only inactive nests would be allowed to be removed or relocated except in the case of safety emergencies.

Please see Section 3.17 (Vegetation Resources) for descriptions of the following federal laws, regulations, and policies applicable to wildlife resources for the Project:

- Federal Land Policy and Management Act
- California Desert Protection Act
- California Desert Conservation Area Plan
- Northern and Eastern Colorado Desert Coordinated Management.
- Desert Renewable Energy Conservation Plan
- Federal Endangered Species Act

State Laws and Regulations

Fully Protected Designations (Fish and Game Code Sections 3511, 4700, 5050, and 5515). The California Fish and Game Code designates 36 fish and wildlife species as "fully protected" from take, including hunting, harvesting, and other activities. The CDFW may only authorize take of designated fully protected species through a Natural Community Conservation Plan (NCCP) or for necessary scientific research.

Nongame Mammals (Fish and Game Code Section 4150). Makes it unlawful to take or possess any non-game mammal or parts thereof, except as provided in the Fish and Game Code or in accordance with regulations adopted by the Fish and Game Commission.

Birds (Fish and Game Code Sections 3503 and 3513). The California Fish and Game Code prohibits take, possession, or needless destruction of bird nests or eggs except as otherwise provided by the code. Section 3513 provides for the adoption of the provisions of the federal MBTA (described above). Section 3503.5 makes it unlawful to take, possess, or destroy birds of prey (in the orders Falconiformes and Strigiformes), or to take, possess, or destroy the nest or eggs of any such bird.

Protected Furbearers (California Code of Regulations Title 14 Section 460). Title 14 specifies that "[f]isher, marten, river otter, desert kit fox and red fox may not be taken at any time." The CDFW may permit capture or handing of these species for scientific research, but does not issue Incidental Take Permits for other purposes.

Please see Section 3.17 (Vegetation Resources) for descriptions of the following state laws and regulations applicable to wildlife resources for the Project:

- California Endangered Species Act
- Natural Community Conservation Planning Act

3.21.2 Existing Conditions

Please see Section 3.17 (Vegetation Resources) for a description of the project site and surrounding buffer area, including regional setting, rainfall and climate, soils, sand transport, hydrology, and vegetation communities. Two former Wildlife Habitat Management Areas identified in the Northern and Eastern Colorado Desert Coordinated Management Plan (NECO) Plan overlap the project site: the Palen-Ford Proposed WHMA and the Desert Wildlife Management Area (DWMA) Continuity WHMA. These land use designations have been overridden by the DRECP LUPA, which was approved with the signing of the Record of Decision in September 2016, and are no longer in effect. However, they are referenced in the Applicant's Biological Resources Technical Report, so this description is retained here. Management emphasis for the Palen-Ford

WHMA was on the dunes and playas within the Palen-Ford dune system. Management emphasis for the DWMA Connectivity WHMA was on the geographic connectivity for the desert tortoise between the Chuckwalla DWMA and the wilderness areas north of I-10.

3.21.2.1 Methodology

As used in this section, the term "project site" refers to the disturbance area of the Project, including the solar fields and related facilities and gen-tie line, an area of approximately 4,200 acres that encompasses the 3,950-acre solar facility and 120-foot-wide, 7-mile-long interconnection (gen-tie) line right-of-way. The term "project vicinity" refers to the general region where the project site is located. The "study area" or "survey area" includes the project site and surrounding buffer areas where biological surveys were conducted. The size of the study area varied between the 2009, 2010, 2013, and 2016 surveys, as described below.

Study Areas

The PSPP Biological Resources Study Area (BRSA) consisted of 14,771 acres, encompassing the original project ROW request and a surrounding buffer area. The majority of the BRSA was surveyed in 2009, with supplemental surveys performed in 2010 to address new alternative layouts at the time resulting in an expanded BRSA. Surveys conducted for PSEGS in 2013 addressed changes to proposed disturbance areas including the natural gas line extension, distribution yard, and gen-tie line reroute. The 2016 survey area encompasses the Palen Solar Project site as well as a buffer. The original BRSA and supplemental survey areas are shown in Figure 3.17-1, Study Areas 2009-2016 (in Appendix A).

3.21.2.2 Surveys

Surveys for special status wildlife are summarized below. For full details, please see the Biological Resources Technical Report in Appendix B.

Agassiz's Desert Tortoise

Full coverage protocol desert tortoise surveys were conducted consistent with USFWS (2009, 2010) protocols during the following periods:

- March 17 to May 22, 2009 (PSPP BRSA except substation)
- October 24 to 25, 2009 (PSPP substation and buffer)
- March 16 to May 16, 2010 (PSPP alternative disturbance areas and buffers)
- April 7 to April 29, 2013 (PSEGS modified linear facilities)
- April 30 to May 15, 2016 (Palen Solar PV Project; modified survey technique)

The surveys for PSPP employed belt transects approximately 10 meters (32.8 feet) apart in order to provide 100 percent (full) coverage of the focused survey area (see Figure 3.17-1, Study Areas 2009-2016, in Appendix A). Surveys performed from 2009 to 2013 included additional transect-based sign surveys within the buffer zone at 1,000-foot, 0.75-mile, and 1-mile intervals from and parallel to the edge of nonlinear portions of disturbance areas as well as at 1,000 feet from the edge of linear portions of disturbance areas (e.g., gen-tie line) (CEC, 2010). The 2016 desert tortoise surveys employed belt transects approximately 10 meters (32.8 feet) apart in order to provide 100 percent (full) coverage within 2,346 acres of the solar facility and within a 300-foot-

wide corridor along the 7-mile gen-tie line. Within 1,601 acres in the northern and eastern extent of the solar facility, surveys employed belt transects approximately 20 meters (65.6 feet) apart.

Mojave Fringe-toed Lizard

Surveys for Mojave fringe-toed lizard were performed concurrently with desert tortoise transects in 2009, 2010, 2013, and 2016. In 2016, surveys employed approximately 201 linear miles of belt transects averaging 20 meters (65.6 feet) apart within the eastern extent of the solar facility (within an area of 1,601 acres) and approximately 324 linear miles of belt transects averaging 10 meters (32.8 feet) apart within the western extent of the solar facility (within an area of 2,346 acres) and 300-foot-wide corridor along the gen-tie line.

Avian Species

A suite of avian habitat assessments, focused surveys, and baseline sampling have been performed since 2009 to characterize existing and potential avian use of the project site (WEST, 2016). Beginning in 2009, in support of PSPP, breeding season point count surveys and focused surveys for special status species were performed. Starting in 2013, extensive surveys and analysis were performed to evaluate avian risks related to the PSEGS technology, including point count surveys, bird use count surveys, shorebird and waterfowl surveys at offsite agricultural ponds, mist net surveys, nocturnal radar surveys, and habitat evaluations for elf owl and Gila woodpecker.

For the full list of avian surveys performed from 2009 to 2016, please see the Biological Resources Technical Report in Appendix B.

Western Burrowing Owl

Most of the project site is suitable habitat for western burrowing owl. Surveys, consistent with Phase II of the 1993 California Burrowing Owl Consortium Guidelines (CBOC, 1993) and the 2012 CDFW Staff Report (CDFW, 2012), were conducted concurrently with surveys for desert tortoise and other fossorial species in 2009, 2010, 2013, and 2016 to provide details of burrowing owl occupancy and site use. Breeding season surveys (Phase III) were conducted during the peak of the 2009 breeding seasons (CEC, 2010).

Golden Eagle

Nest Surveys. Aerial and ground-based golden eagle nesting surveys were conducted in 2010, 2012, 2013, 2014, and 2015 following the *USFWS's February 2010 Interim Golden Eagle Inventory and Monitoring Protocols* (Pagel et al., 2010). During surveys, all areas within a 10-mile radius from the project boundaries were searched for large stick nests that may be used by golden eagles and other raptors on cliff faces and transmission towers. In addition to project-related nest surveys, in 2012 the BLM collected updated field data and a report of current breeding status of golden eagles within the BLM's California Desert District (including the project vicinity). This effort entailed aerial and ground-based surveys of mountain ranges containing known and potential golden eagle nesting habitat.

Winter surveys. Winter golden eagle surveys were conducted in January and February 2013 (BBI, 2013b) to evaluate use of the project site and surrounding region by wintering and resident golden eagles using a combination of baited camera traps and visual surveys (WEST, 2016).

Prey Abundance Surveys. Golden eagle prey abundance surveys were conducted during the spring of 2013 (BBI, 2013a). Surveyors recorded the number of black-tailed jackrabbits (*Lepus californicus*) and desert cottontails (*Sylvilagus audubonii*) detected along transects (WEST, 2016). Similar counts were performed during the desert tortoise and other special status species transects in spring 2016.

Bat Species

A survey for bat roosts within the project site and surrounding region (e.g., freeway underpasses, bridges, buildings) was conducted in 2009 and 2013. Potential bat roosts were surveyed within the project site in 2016 during transect surveys. Acoustic bat surveys were conducted in May 2013 and October through mid-December 2013 (WEST, 2016).

Other Special Status Wildlife Species

Surveys were performed in 2016 by systematically walking linear transects on the project site while surveyors visually searched for burrows and other sign of special status fossorial species. In addition to sign of desert tortoise and western burrowing owl, presence of desert kit fox sign (e.g., dens, complexes, scat, and tracks) and American badger sign were recorded. All common and special status species incidentally observed or detected by sign or call during all survey efforts were also recorded. See the Biological Resources Technical Report in Appendix B for the full list of wildlife observed.

3.21.2.3 Wildlife Movement and Connectivity

For many wildlife species, movement among habitat areas is a part of regular activities or may be needed for long-term population sustainability. Land use changes can impact wildlife movement across the landscape, leading to habitat fragmentation and population isolation. Habitat fragmentation results when habitat conversion to other uses separates or isolates the remaining habitat areas. The result of fragmentation is (1) less habitat availability, and (2) less opportunity for wildlife to make use of the remaining habitat, due to its physical isolation. Habitat areas may be isolated from one another by distance across unfavorable habitat, or by linear barriers such as roadways or aqueducts. Barriers may be impassable for some species (e.g., a wide busy road, for a slow-moving animal) or may be only minor interruptions to movement (such as a narrow, lightly travelled road). Fragmentation and subsequent population isolation can affect wildlife populations by limiting dispersal and genetic exchange, limiting movement within the home-ranges for wide-ranging species, and limiting the opportunity for populations to occupy new habitat in response to the effects of climate change. Fragmentation also increases habitat "edge" (i.e., habitat adjacent to other land uses), leading to increased exposure to invasive species, human disturbance (vehicles, trash dumping, etc.), and an overall reduction of biodiversity and alteration or degradation of ecological processes.

Fragmentation and isolation of natural habitat ultimately results in the loss of vulnerable native species within those areas. Accessibility between habitat areas (i.e., "connectivity") is important

to long-term genetic diversity and demography of wildlife populations. In the short term, connectivity may also be important to individual animals' ability to occupy their home ranges, if their ranges extend across a potential movement barrier. These considerations apply to greater or lesser extent to all plants and animals. Plant populations "move" over the course of generations via pollen and seed dispersal; most birds and insects travel and disperse via flight; terrestrial species, including small mammals, reptiles, arid land amphibians, and non-flying invertebrates, disperse across land. Therefore, landscape barriers and impediments are more important considerations for movement of terrestrial species. These considerations are especially important for rare species and wide-ranging mammals, which both tend to exist in lower population densities.

In developed landscapes where remnant habitat exists as partially isolated patches surrounded by other land uses, planning for wildlife movement generally focuses on "wildlife corridors" to provide animals with access routes between habitat patches. In largely undeveloped areas, including the Chuckwalla Valley, wildlife habitat is available in extensive open space areas throughout much of the region, but specific barriers may impede or prevent movement. In these landscapes, wildlife movement planning focuses on specific sites where animals can cross linear barriers (e.g., wash crossings beneath Interstate 10), and on broader linkage areas that may support stable, long-term populations of target species and allow demographic movement and genetic exchange among populations in distant habitats (e.g., surrounding mountains).

The California Desert Connectivity Project provides a comprehensive and detailed habitat connectivity analysis for the California deserts (Penrod et al., 2012). The Connectivity Project identified a Desert Linkage Network to maintain habitat for species and species' movement between landscape blocks. The landscape blocks identified in the project vicinity are the Palen–McCoy Mountains to the northeast and the Chocolate Mountains to the southwest. These landscape blocks are connected by broad habitat linkages. The CDCA Plan, as amended by the DRECP, designates specific areas within the mapped habitat linkage for multiple species habitat linkage. The project site is located within a habitat linkage area identified by the Desert Linkage Network, but outside of the linkages identified in the DRECP (Figure 3.21-1, Habitat Linkages and Wildlife Movement Corridors).

In the Chuckwalla Valley, the biologically important functions of large mammal movement are the long-term demographic and genetic effects of occasional animal movement among mountain ranges and other large habitat areas. Animals such as desert bighorn sheep may travel across the valley infrequently, to reach other subpopulations in surrounding mountains. In contrast to large animal movement, desert tortoises and other less-mobile animals may live out their entire lives within a linkage area between larger habitat blocks; for these species, movement among surrounding habitat areas may take place over the course of several generations.

Movement opportunity varies for each species, depending on motility and behavioral constraints, as well as landscape impediments. For many terrestrial wildlife species, movement across the Chuckwalla Valley, including movement to and from the project site, or across the site, is limited by anthropogenic barriers or land uses. The I-10 freeway, located south of the project site, is a significant obstruction to movement by terrestrial wildlife. Some species, such as coyote, may learn to cross the freeway safely. But the freeway presents an impassable or high-risk barrier to north-south movement for most terrestrial species.

On the 32-mile stretch of I-10 between the Desert Center and Wiley Wells Road exits, there are 24 crossings that provide safe access under the freeway (CEC, 2010). Other than these crossings, the freeway is a nearly complete barrier to north-south terrestrial wildlife movement in the Chuckwalla Valley. A survey of potential tortoise accessibility across the I-10 investigated these 24 crossings (oriented approximately in a north-south direction) for suitability for large mammals, small mammals, and reptiles (CEC, 2010). The survey found that fencing was often missing or in disrepair, and was not tethered to the underpasses, and does not function to funnel wildlife under the interstate. It concluded the underpasses provide connectivity and safe movement corridors between habitat to the north and south of the I-10, but the fencing does not prevent animals from accessing I-10. Wildlife species and sign detected at the undercrossings included lizards, rodents, rabbit, roadrunner, ground squirrel, fox, coyote, bobcat, and mule deer.

Based on motion-activated camera images, the California Department of Fish and Wildlife has identified the largest undercrossing as a priority for maintaining mule deer habitat connectivity beneath the I-10 Freeway. In the immediate vicinity of the project site, channels draining storm flows from the Chuckwalla Mountains toward Palen Dry Lake are routed under the I-10 via three bridge spans onto the project site. Each span is 10-11 feet high and 100-200 feet long. All three are large enough to allow safe crossing beneath the I-10 for most species, including those listed above. These three bridges give native wildlife the opportunity to move north and south across the freeway, to and from habitat on the project site and immediately south of it. Other linear features such as smaller paved and unpaved roads, transmission lines have only minimal effects on wildlife movement.

The project site is adjacent to a citrus and date palm orchard of about 800 acres to the northwest. Depending on extent and type of fencing, if any, these agricultural lands may be passable to "corridor passage" species, such as large mammals. Disused agricultural lands are suitable for passage species and may also be suitable for some "dweller" species, including small mammals and reptiles, but are generally poorly suited for desert tortoises.

BLM land use designations for wildlife and habitat, including management to maintain connectivity among habitat areas, include special management of ACECs, Wilderness Areas, Wilderness Study Areas, and DWMAs. Certain BLM lands within the Chuckwalla Valley and near the project area are designated as ACECs, and DWMAs (Figure 3.15-1, Special Designations Near Project Site, in Appendix A).

3.21.2.4 Climate Change

Under current models of climate change, the California deserts are expected to become warmer and may become drier (although some models predict increased precipitation in the desert regions) as climate change progresses (see Chapter III.3 and Appendix P in the DRECP Final EIS; BLM, 2015). Species will need to cope with decreasing and less consistent water availability and an increasing number of days above current minimum temperatures. These two abiotic factors are among the primary determinants of species' range. Maintaining corridors or linkages will be important to allow the movement of populations of plants and animals to facilitate shifts in species ranges as climate changes occur (BLM, 2015).

3.21.2.5 Special Status Wildlife Species

Special status species are those that have been afforded special recognition by federal, State, or local resource agencies or organizations, are often of relatively limited distribution, and typically require unique habitat conditions, which also may be in decline. Special status criteria include:

- Listed, or a candidate for listing, by State or federal agencies as endangered or threatened;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA);
- Listed as Species of Special Concern or Special Animal by CDFW;
- BLM Sensitive species;
- Protected under other statutes or regulations (e.g., Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, etc.); and
- Considered a locally significant species, that is, a species that is not rare from a state-wide perspective, but is rare or uncommon in a local context such as within a county or region or is so designated in local or regional plans, policies, or ordinances.

The BLM designates Sensitive species as those requiring special management considerations to promote their conservation and reduce the likelihood and need for future listing under FESA. BLM Sensitive species also include all Federal Candidate and Federally Delisted species, which were so designated within the last 5 years.

Table 3.21-1 summarizes the special status wildlife species that were reviewed for their potential to occur within the project site and its vicinity, based on regional plans and database records. Special status wildlife species that were detected within or near the project site or have a moderate potential to occur based on the presence of suitable habitat are discussed further below. Several species were determined to have a low probability of occurrence due to the absence of suitable habitat and are described in the Biological Resources Technical Report in Appendix B.

Table 3.21-1. Special Status Wildlife Present or Potentially Present in the Project Site.

Common Name	Scientific Name	Status:[1] State/Federal/BLM	Potential to Occur on the Project Site
AMPHIBIANS			
Couch's spadefoot toad	*Scaphiopus couchii*	CSC/__/BLM Sensitive	**Low.** No breeding habitat on the site, may be within adult dispersal distance from off-site breeding areas.
REPTILES			
Agassiz's desert tortoise	*Gopherus agassizii*	ST/FT/__	**Low to moderate.** No live tortoises found within proposed facility, but possible historical sign present. Western extent of gen-tie is within occupied habitat.
Mojave fringe-toed lizard	*Uma scoparia*	CSC/__/BLM Sensitive	**Occurs.** Live individuals observed on project site and eastern extent of gen-tie, with relatively higher concentrations in sand transport Zone II.

Table 3.21-1. Special Status Wildlife Present or Potentially Present in the Project Site.

Common Name	Scientific Name	Status:[1] State/Federal/BLM	Potential to Occur on the Project Site
BIRDS			
Golden eagle	*Aquila chrysaetos*	CFP, WL/BCC/BLM Sensitive	**High (uncommon, foraging only).** No suitable nesting habitat; site is over 3 miles from suitable nesting habitat. Minimal nesting activity recorded within 10 miles. Local foraging observations uncommon.
Short-eared owl	*Asio flammeus*	CSC/__/__	**Low (migration only).** No suitable nesting habitat, uncommon migrant in vicinity.
Western burrowing owl	*Athene cunicularia hypugaea*	CSC/BCC/BLM Sensitive	**Occurs.** Active burrows observed on proposed project site.
Redhead	*Aythya Americana*	CSC/__/__	**Moderate (migration only).** No foraging or nesting habitat; occasional migrant in vicinity.
Ferruginous hawk	*Buteo regalis*	WL/BCC/__	**High (uncommon, winter only).** Outside nesting range, within wintering range; prey sources are limited.
Swainson's hawk	*Buteo swainsoni*	ST/BCC/BLM Sensitive	**High (uncommon, migration only).** Outside nesting range; Regularly observed regionally in groups during migration.
Costa's hummingbird	*Calypte costae*	__/BCC/__	**High.** Suitable foraging and nesting habitat present.
Vaux's swift	*Chaetura vauxi*	CSC/__/__	**Occurs (uncommon, migration only).** Outside nesting range; migrants observed in the vicinity.
Mountain plover	*Charadrius montanus*	CSC/BCC/BLM Sensitive	**Occurs (winter and migration only).** Outside nesting range, may use nearby agricultural areas and dry lakebed as winter habitat; detected in vicinity during surveys.
Black tern	*Chlidonias niger*	CSC/__/__	**Occurs (migration only).** Detected in vicinity during surveys. Uncommon migrant.
Northern harrier	*Circus cyaneus*	CSC/__/__	**Occurs (uncommon, winter and migration only).** Suitable foraging habitat, no suitable nesting habitat. Observed in vicinity.
Gilded flicker	*Colaptes chrysoides*	SE/BCC/BLM Sensitive	**Low.** Marginal habitat; periphery of geographic range. Not detected during surveys.
Black swift	*Cypseloides niger*	CSC/BCC/__	**Occurs (uncommon, migration only).** Outside breeding range. Observed during surveys.
Willow flycatcher	*Empidonax traillii*	SE/__/__ (state listing status applies to full species; the southwestern willow flycatcher is also federally listed)	**Occurs (migration only).** No foraging or nesting habitat, migrants may be observed. Detected during surveys (subspecies unknown).

Table 3.21-1. Special Status Wildlife Present or Potentially Present in the Project Site.

Common Name	Scientific Name	Status:[1] State/Federal/BLM	Potential to Occur on the Project Site
California horned lark	*Eremophila alpestris actia*	WL/__/__	**Occurs.** Suitable foraging and nesting habitat. Regularly detected during surveys.
Prairie falcon	*Falco mexicanus*	WL/BCC/__	**Occurs (foraging only).** Suitable foraging habitat, no suitable nesting habitat. Regularly detected during surveys.
American peregrine falcon	*Falco peregrinus anatum*	CFP/BCC/__	**Occurs (foraging and migration only).** Suitable foraging habitat, no suitable nesting habitat. Detected during surveys.
Sandhill crane	*Grus canadensis*	CSC/__/__	**Occurs (migration only).** No foraging or nesting habitat, migrants observed during surveys.
Yellow-breasted chat	*Icteria virens*	CSC/__/__	**Occurs (migration only).** No suitable nesting habitat, migrants observed during surveys.
Loggerhead shrike	*Lanius ludovicianus*	CSC/BCC/__	**Occurs.** Suitable foraging and nesting habitat. Regularly detected during surveys.
Gila woodpecker	*Melanerpes uropygialis*	SE/BCC/BLM Sensitive	**Low.** Marginal habitat, periphery of geographic range. Not detected during focused surveys. One incidental observation over a mile from project site.
Elf owl	*Micrathene whitneyi*	SE/BCC/BLM Sensitive	**Low.** Marginal habitat and located on periphery of geographic range. Not detected during focused surveys.
Long-billed curlew	*Numenius americanus*	WL/BCC/__	**Occurs (migration only).** No foraging or nesting habitat, migrants observed during surveys.
Lucy's warbler	*Oreothlypis luciae*	CSC/BCC/BLM Sensitive	**Occurs.** Moderate potential for nesting in microphyll woodland. Detected during surveys.
American white pelican	*Pelecanus erythrorhynchos*	CSC/__/__	**Occurs (migration only).** No foraging, nesting, or wintering habitat; migrants observed during surveys.
Black-tailed gnatcatcher	*Polioptila melanura*	WL/__/__	**Occurs.** Suitable foraging and nesting habitat. Nesting documented within the site.
Vesper sparrow	*Pooecetes gramineus*	CSC/__/__	**Occurs (migration only).** No suitable wintering or nesting habitat; one incidental observation in 2013.
Purple martin	*Progne subis*	CSC/__/__	**Occurs (migration only).** No suitable nesting or wintering habitat; one observation in 2013.
Vermilion flycatcher	*Pyrocephalus rubinus*	CSC/__/__	**Low (migration only).** No suitable nesting habitat, not detected during surveys.
Ridgway's clapper rail	*Rallus obsoletus yumanensis*	ST, CFP/FE/__	**Low (migration only).** No suitable nesting or foraging habitat. Not detected during surveys.

Table 3.21-1. Special Status Wildlife Present or Potentially Present in the Project Site.

Common Name	Scientific Name	Status:[1] State/Federal/BLM	Potential to Occur on the Project Site
Bank swallow	*Riparia riparia*	ST, CFP/__/__	**Occurs (migration only).** No nesting habitat; migrants observed during surveys.
Sonora Yellow warbler	*Setophaga petechia sonorana*	CSC/BCC/__	**Occurs (migration only).** No suitable nesting habitat, migrants observed during surveys.
Lawrence's goldfinch	*Spinus lawrencei*	__/BCC/__	**Occurs (migration only).** No suitable nesting or wintering habitat, one observation recorded during surveys.
Bendire's thrasher	*Toxostoma bendirei*	CSC/BCC/BLM Sensitive	**Low.** Margin of geographic range, occasional transients may be observed. Not detected during surveys.
Crissal thrasher	*Toxostoma crissale*	CSC/__/__	**Occurs (transient only).** No suitable nesting habitat. One observation recorded during surveys.
Le Conte's thrasher	*Toxostoma lecontei*	CSC/BCC/__	**Occurs.** Suitable foraging and nesting habitat. Recorded nesting within the site.
Bell's vireo	*Vireo bellii*	__/BCC/__	**Occurs (migration only).** No suitable wintering or nesting habitat; one migrant observed during surveys.
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	CSC/__/__	**Occurs (migration only).** No suitable wintering or nesting habitat, migrants observed during surveys.
MAMMALS			
Pallid bat	*Antrozous pallidus*	CSC/__/BLM Sensitive	**Occurs (foraging only).** Suitable foraging habitat, roosting habitat may be available in vicinity. Detected during acoustical sampling.
Townsend's big-eared bat	*Corynorhinus townsendii*	CSC/__/BLM Sensitive	**Moderate (foraging only).** Suitable foraging habitat, no suitable roosting habitat. Not detected during acoustical sampling, but species is difficult to detect.
Spotted bat	*Euderma maculatum*	CSC/__/BLM Sensitive	**Low (foraging only).** Limited foraging habitat, no suitable roosting habitat. Not detected during acoustical sampling.
Western mastiff bat	*Eumops perotis californicus*	CSC/__/BLM Sensitive	**Low (foraging only).** Suitable foraging habitat, no suitable roosting habitat. Not detected during acoustical sampling.
Hoary bat	*Lasiurus cinereus*	SA/__/__	**Moderate (foraging only).** No suitable roosting habitat. Potential calls detected, but not confirmed during acoustical sampling.
Western yellow bat	*Lasiurus xanthinus*	CSC/__/__	**Moderate (foraging only).** Suitable foraging habitat in adjacent agricultural area, no suitable roosting habitat. Detected during acoustical sampling at pond in adjacent agricultural area.
California leaf-nosed bat	*Macrotus californicus*	CSC/__/BLM Sensitive	**Low (foraging only).** Suitable foraging habitat, no suitable roosting habitat. Not detected during acoustical sampling.

Table 3.21-1. Special Status Wildlife Present or Potentially Present in the Project Site.

Common Name	Scientific Name	Status:[1] State/Federal/BLM	Potential to Occur on the Project Site
Arizona myotis	*Myotis occultus*	CSC/__/__	**Low (foraging only).** No suitable roosting habitat (well below elev. range). Not detected during acoustical sampling.
Cave myotis	*Myotis velifer*	CSC/__/BLM Sensitive	**Low (foraging only).** Limited foraging habitat, no suitable roosting habitat. Not detected during acoustical sampling.
Yuma myotis	*Myotis yumanensis*	__/__/BLM Sensitive	**Low (foraging only).** Limited suitable foraging habitat, no roosting habitat. Not detected during acoustical sampling.
Colorado Valley woodrat	*Neotoma albigula venusta*	SA/__/__	**Low.** No suitable habitat. Not detected during surveys.
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	CSC/__/__	**Low (foraging only).** No suitable roosting habitat. Not detected during acoustical sampling.
Big free-tailed bat	*Nyctinomops macrotis*	CSC/__/__	**Occurs (foraging only).** Suitable foraging habitat, no roosting habitat. Detected during acoustical sampling.
Burro deer (desert mule deer)	*Odocoileus hemionus eremicus*	CPGS/__/__	**Occurs.** Suitable foraging habitat. Scat and tracks observed, primarily within dry wash woodland.
Desert bighorn sheep	*Ovis canadensis nelsoni*	CFP/__/BLM Sensitive	**Low. Greater than 3 miles from** mountainous habitat; low potential for inter-mountain dispersal. Low foraging or cover habitat value. Not detected during surveys.
Yuma mountain lion	*Puma concolor browni*	CSC/__/__	**Moderate (uncommon).** Suitable habitat and burro deer (prey source) present. Not detected during surveys.
American badger	*Taxidea taxus*	CSC/__/__	**Occurs.** Suitable foraging habitat. Active dens/digs observed.
Desert kit fox	*Vulpes macrotis arsipus*	CPF/__/__	**Occurs.** Active dens/complexes with sign observed.

Source: CNDDB, 2016; Ironwood, 2016

Blanks "__" indicate that there is no applicable conservation status.

Federal

FE = Federally listed endangered: species in danger of extinction throughout a significant portion of its range

FT = Federally listed, threatened: species likely to become endangered within the foreseeable future

FCT = Proposed for federal listing as a threatened species

BCC = Fish and Wildlife Service Bird of Conservation Concern

State

CSC = Species of Special Concern – species of concern to CDFW because declining population levels, limited ranges, or continuing threats have made them vulnerable to extinction

CFP = California Fully Protected

SE = State listed as endangered

ST = State listed as threatened

WL = State watch list

SA = Special Animal

CPF = California Protected Furbearing Mammal

CPGS = California Protected Game Species

Bureau of Land Management

BLM Sensitive = Species that require special management consideration to avoid potential future listing under the FESA and that have been identified in accordance with procedures set forth in BLM Manual 6840, the Special Status Species Management Manual for the Bureau of Land Management (Dec. 12, 2008).

Insects

The project site probably supports a wide variety of common native and non-native invertebrates. Some of the orders identified in the project area included Hemiptera (true bugs), Coleoptera (beetles), and Diptera (flies). Various insects were observed on the project site during surveys and the adjacent agricultural operation and concomitant water supply likely attracts and supports a variety of insect species. Other species may migrate over the project site and general area at various times of the year, or stopover at the project site and general area during migration. Little data on invertebrate migration patterns is available, and it is unclear which, if any, special status species might be present at or over the project site and general vicinity during migratory movements.

Amphibians

Couch's Spadefoot Toad

Couch's spadefoot toad (*Scaphiopus couchii*) is a CDFW Species of Special Concern and a BLM Sensitive species. It is found where substrate is capable of sustaining temporary breeding pools for at least nine days (to allow larval development), and loose enough to permit burial in subterranean burrows. Breeding habitat includes temporary impoundments at the base of dunes as well as road or railroad embankments, temporary pools in washes or channels, pools that form at the downstream end of culverts, and playas. There is very limited potential for Couch's spadefoot toad breeding habitat on the project site.

No Couch's spadefoot toads were observed during surveys in 2009, 2010, 2013, and 2016. However, because of the short time this species is above ground (i.e., after summer rains), the lack of observations does not suggest the species is absent from the project site. Couch's spadefoot toads could occur wherever friable soils occur, and breeding habitat could occur wherever there is the potential for sustained ponding. Breeding ponds may occur off-site (such as the Palen Lake area) within adult dispersal distance (adult dispersal distances are unknown).

Reptiles

Agassiz's Desert Tortoise

The desert tortoise (*Gopherus agassizii*) is State listed as threatened and the Mojave population is federally listed as threatened. The Mojave population includes those animals living north and west of the Colorado River including all wild desert tortoises in California (USFWS, 1990).

Desert tortoises spend much of their lives in burrows, even during their seasons of activity. In late winter or early spring, they emerge from over-wintering burrows and typically remain active through fall. Activity decreases in summer and is often crepuscular during the hottest times. Tortoises often emerge after summer rain storms. Activity and movement is generally influenced by temperature and precipitation, which correlate with food and water resources. Extreme high and low temperatures and periods of drought typically result in reduced tortoise activity (Peterson, 1996). Mating occurs during spring and fall. Tortoises are long-lived and grow slowly, requiring 13 to 20 years to reach sexual maturity [at approximately 180mm midline carapace length (MCL)]. Eggs are generally laid in friable soil near burrow entrances between April and June and occasionally September and October. Eggs hatch within three to four months (Rostal et al., 1994).

Tortoises are found most often on gentle slopes with sandy-gravel soils. Soils must be appropriately soft for digging burrows, but firm enough so that burrows do not collapse (Anderson et al., 2000). Annual forbs and grasses constitute their primary food sources. Current research has suggested that plant species that have high potential for potassium excretion (high-PEP) may be critical to the diet of desert tortoise (Oftedal, 2002; Oftedal et al., 2002). Excess potassium can be detrimental to the health of tortoises. When excreting potassium salts from their bladder, tortoises risk expelling valuable water and protein in the process.

Desert tortoises occupy home ranges, which are generally defined as the area traversed while carrying out a range of normal activities (e.g., foraging and mating) (USFWS, 2011). The size of their home ranges can vary with respect to sex, geographic location, substrate, topography, and climate. Tortoises are philopatric (tending to remain in a particular area), establishing home ranges between 15 and 45 hectares (Barrett, 1990; O'Connor et al., 1994; Harless et al., 2009) depending on region. Home ranges of females are generally smaller than those of males (Duda et al., 1999). Some tortoises have been known to travel great distances, although these movements may occur outside their usual home range (Berry, 1986).

The project site is located within the Colorado Desert Recovery Unit (USFWS, 2011). The highest desert tortoise densities within this recovery unit (Murphy et al., 2007) are in Chemehuevi and Ward valleys (approximately 60 miles north of the project site), on the Chuckwalla Bench within the Chuckwalla DWMA (approximately 15 miles southwest of the project site), and in Joshua Tree National Park (approximately 40 miles northwest of the project site).

The project site supports suitable desert tortoise habitat, with low predicted occupancy values, not accounting for habitat degradation resulting from anthropogenic features (Nussear et al., 2009). The site consists of two primary zones, differing in soil conditions that affect habitat suitability for desert tortoise. The eastern extent of the site is covered by shallow sand sheets and dunes with predicted desert tortoise occupancy value of less than 0.4 (Nussear et al., 2009). This value falls below the 0.5 value used in previous assessments as the threshold for suitable desert tortoise habitat (USFWS, 2011 and 2012).

Desert tortoise surveys prior to 2016 resulted in no live desert tortoises, seventeen burrows (Class 3–5), fifteen pallets (Class 4 or 5), and nineteen tortoise shell remains (Class 5) within the solar facility boundary of the project site (Figure 3.21-2, Desert Tortoise Observations 2009–2016). Class 4 and 5 burrows and pallets are defined as not active and not positively attributable to desert tortoise. Class 5 sign is in deteriorated condition. Active and recent tortoise use was not evident. The most recent (modified protocol) surveys performed in spring of 2016 identified no live desert tortoises, no active sign, and no deteriorated sign within the solar facility portion of the project site. In addition, the 2016 surveyors revisited GPS locations of sign identified during earlier surveys, and were unable to relocate them. The portion of the Chuckwalla Critical Habitat Unit that overlaps the project ROW but is outside the fenceline did not exhibit notably higher value tortoise habitat compared to elsewhere within the project site.

Habitat with higher predicted occupancy values (Nussear et al., 2009) and documented sign of recent tortoise activity is found along the western 2 miles of the gen-tie route. The 2009 surveys identified four live desert tortoises along the gen-tie route, three within the buffer and one within the proposed disturbance area. During spring 2013 surveys, two recent burrows were found within

buffer zones along the gen-tie reroute and one north of I-10 (Karl, 2013). During the 2016 surveys, active tortoise sign (one active burrow with tracks and scat and two records of scat) was found along the gen-tie route near the previous observations. Habitat with higher predicted occupancy values (Nussear et al., 2009) is found south of I-10 corresponding with higher elevation alluvial fan plant communities. Seven live tortoises (adult and juvenile) were found within the buffer surveys south of I-10 in 2010.

The lower amount of detectable sign found within the solar facility in 2016 compared with surveys in prior years may be a result of the ability to detect historical sign or potential reduction in the number of tortoise in the overall area. Natural erosion from wind and rain coupled with floods may have washed away or buried the small amount of historical disarticulated shell remains. Low dispersal onto the site, which would have resulted in tortoise sign, may potentially be due to recent development of an adjacent farm leading to an increased abundance of local predators.

Critical habitat. Approximately 207 acres of the Chuckwalla desert tortoise critical habitat unit (CHU) overlaps the southern margin of project ROW request but is not part of the proposed project footprint, just north of the I-10 Freeway. The western end of the gen-tie line overlaps an additional approximately 37 acres of the CHU. The majority of the CHU (over 1,023,000 acres) is located south and west of the project site.

Connectivity. Habitat connectivity for desert tortoise has become the subject of increased focus due to the unique demographic and genetic characteristics of the species. Conservation biologists and wildlife agencies are increasingly emphasizing habitat linkages among desert tortoise core populations and conservation areas. In order to be effective over multiple generations, linkages must be large enough for resident tortoises to persist within the linkage and continue to interact with tortoises within and outside the linkage.

On a regional scale, the project site is situated outside priority habitat and linkages for desert tortoise (Figure 3.21-3, Desert Tortoise Linkages), based on the Nussear et al. (2009) habitat model and least cost paths modeled by Hagerty et al. (2011). On a local scale, desert tortoise connectivity is further impaired by adjacent land uses and natural habitats. The project site is bounded by private land to the west, I-10 to the south, and dune habitat to the northeast. In combination, these surrounding land uses limit the site's accessibility to desert tortoises. Figure 3.21-4, Local Desert Tortoise Connectivity, illustrates the locations where tortoise can cross I-10 in an underpass. Approximately 1,600 acres of private lands are located west of the project site, of which approximately 830 acres are in active agricultural use eliminating suitable habitat for desert tortoises and created a partial barrier to tortoise movement from west to east. The adjacent sand transport zone and Palen Dry Lake are habitat types generally not a regular part of tortoises' home ranges due to poor cover, low forage, and non-friable soils; however, desert tortoise sign has been documented within these habitats.

A survey of potential tortoise accessibility across I-10 investigated fencing and potential wildlife underpasses is summarized under Wildlife Movement (above). The survey concluded the underpasses provide connectivity and safe movement corridors between habitat to the north and south of the I-10 interstate, but the fencing does not prevent animals from accessing I-10, or funnel animals to the underpasses (CEC, 2010).

Mojave Fringe-toed Lizard

The Mojave fringe-toed lizard (*Uma scoparia*) is a CDFW Species of Special Concern and BLM Sensitive species. It is found in arid, sandy, sparsely vegetated desert shrubland habitats throughout much of its range (Jennings and Hayes, 1994). It is restricted to aeolian sand and surrounding habitats in the deserts of Los Angeles, Riverside, and San Bernardino Counties in California and La Paz County in Arizona (Hollingsworth and Beaman, 1999; Stebbins, 2003; Murphy et al., 2006). It is known from more than 35 separate sand dune complexes in California and one in Arizona (Jarvis, 2009). Nearly all records are at sand dune complexes associated with present-day and historical drainages of three major river systems: the Amargosa, Mojave, and Colorado Rivers (BLM, 2015).

The Mojave fringe-toed lizard normally hibernates from November to February, emerging from hibernation sites from March to April. The breeding season is April to July (Mayhew, 1965). From May to September, it is active in mornings and late afternoon, but seeks cover during the hottest parts of the day. It burrows in the sand for both cover from predators and protection from undesirable temperatures (Stebbins, 2003), but will also seek shelter in rodent burrows. Home ranges vary greatly between sexes, with adult males typically holding larger (0.10 hectares or 0.3 acres) home ranges that are on average three times that of females (BLM, 2015). It is primarily insectivorous, but also eats plant food, including leaves, seeds and buds (Stebbins, 2003).

The assessment of the sand transport system (see Section 3.17 – Vegetation Resources) serves to characterize suitable Mojave fringe-toed lizard habitat. Its distribution is more extensive on the site than the mapped stabilized and partially stabilized sand dunes, extending into about half of Sand Transport Zone III as well as contiguous wash habitat supporting appropriate soils.

Wildlife surveys conducted in 2009 and 2010 identified highest concentrations of Mojave fringe-toed lizard within Zone II of the sand transport system, which is characterized by vegetated active sand dunes (see Figure 3.21-5, Mojave Fringe-Toed Lizard Observations within the Project Site 2009-2016). The majority of Zone II is outside the project site, but approximately 228 acres of the project site is located within Zone II. Within the project site, surveys conducted in 2009, 2010, and 2016 had consistent results in that Zone II supported the highest density of observations compared to other portions of the project site. In In 2016, 34 observations were recorded within the 228 acres within Zone II that lie within the project site. In 2009 and 2010, a total of 66 observations were recorded within Zone II.

Approximately 901 acres of the project site is located within Zone III of the sand transport system. In 2009 and 2010, 26 observations of Mojave fringe-toed lizard were recorded within Zone III. In 2016, 114 observations were recorded within Zone III.

As shown in Figure 3.21-5 (Mojave Fringe-Toed Lizard Observations within the Project Site 2009-2016), Mojave fringe-toed lizard observations in Zone IV appeared to correlate with washes that were contiguous with occupied habitat to the northeast. This may be due to the lower wash reaches supporting relatively unconsolidated, fine sediments. The presence of suitable habitat within these washes likely fluctuates between years depending on recent surface flow and adequate sand deposition. The number of Mojave fringe-toed lizard observations associated with wash habitat was relatively lower than areas of more suitable habitat to the east and

north. In 2009 and 2010, 2 observations of Mojave fringe-toed lizard were recorded in Zone IV. In 2016, 65 observations were recorded.

The variation in recorded observations between previous surveys and 2016 data may be mostly due to differences in ambient temperature, and corresponding lizard activity levels, at the time of surveys. Additionally, the surveys conducted in 2009 were the first focused field effort at the site and observations of Mojave fringe-toed lizard were largely incidental to observations of other species. The 2016 surveys were performed with an enhanced understanding of species' potential occurrence due to previous records and newly available data sources, including the DRECP species suitability models for Mojave fringe-toed lizard, which were not available in 2009.

Eighteen records (five in 2010 and thirteen in 2016) of Mojave fringe-toed lizards were on the easternmost 2 miles of the gen-tie line. The western 5 miles of the gen-tie is located outside suitable habitat for this species.

The PSPP PA/FEIS (BLM, 2011) stated that nearly one-half (1,781 acres) of the PSPP disturbance area contained suitable habitat for Mojave fringe-toed lizard. The estimated boundary of suitable habitat was updated through observations of Mojave fringe-toed lizard recorded in 2016 (95 percent of the total observations, as shown in Figure 3.21-5, Mojave Fringe-Toed Lizard Observations within the Project Site 2009-2010) resulting in approximately 1,622 acres of suitable habitat mapped within the project site.

Raptors

Western Burrowing Owl

Western burrowing owl *(Athene cunicularia hypugaea)* is a CDFW Species of Special Concern, and BLM Sensitive species. It inhabits arid lands throughout much of the western United States and southern interior of western Canada (Haug et al., 1993) and is typically a year-round resident in much of California (Gervais et al., 2008), including burrowing owls which nest in the region, and others which nest farther north but over-winter in California. Suitable habitat includes open habitat with available burrowing opportunities, including agricultural fields (active and fallow), creosote scrub, desert saltbush, ephemeral washes, and ruderal areas.

Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by ground squirrels, kit fox, desert tortoise, and other wildlife. Burrowing owls have a strong affinity for previously occupied nesting and wintering sites and will often return to previously used burrows, particularly if they had successful reproduction in previous years (Gervais et al., 2008). The southern California breeding season (defined as from pair bonding to fledging) is generally from February to August, with peak breeding activity from April through July (Haug et al., 1993), though it may be earlier in the deserts.

In the Colorado Desert, burrowing owls generally occur at low densities in scattered populations, but they can be found in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant (Gervais et al., 2008). Burrowing owls tend to be opportunistic feeders, and a large portion of their diet consists of beetles, grasshoppers, and other larger arthropods; consumption of insects increases during the breeding season (Haug et al., 1993). Small mammals, especially mice and voles (*Microtus* and *Peromyscus spp.)* are important food items, and

other prey animals include herpetofauna, young cottontail rabbits, bats, and birds such as sparrows and horned larks.

Based on the results of several years of surveys, the project site supports breeding burrowing owl in low densities. Phase I through III protocol-level surveys conducted in spring and summer 2009 found two nesting burrowing owl pairs with juveniles and four active burrows (see Figure 3.21-6, Western Burrowing Owl Observations). One pair with juveniles was observed using two burrows near the center of the site, and a second pair with juveniles was observed using two burrows near the northwest corner of the site (WEST, 2016). Surveys in 2009 found four burrowing owls with active burrows within the project site (CEC, 2010). Desert Tortoise Surveys performed in 2016 (consistent with Phase II of the CBOC 1993 Guidelines and the 2012 CDFW Staff Report) were conducted concurrently with surveys for desert tortoise and other fossorial species, and identified five burrows with sign (e.g., whitewash, pellets, or feathers) within the project site. The potential for burrowing owl occupancy (approximately four active burrows) did not vary substantially between 2009 and 2016 based on the sign recorded during surveys.

Golden Eagle

The golden eagle is a USFWS Bird of Conservation Concern and is protected under the Bald and Golden Eagle Protection Act. Golden eagles are typically year-round residents throughout most of the western United States. They breed from late January through August with peak activity March through July (Kochert et al., 2002). Migratory patterns are usually fairly local in California where adults are relatively sedentary, but dispersing juveniles sometimes migrate south in the fall. Habitat for golden eagle typically includes rolling foothills, mountain areas, and deserts. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savanna, and early successional stages of forest and shrub habitats. Golden eagles primarily prey on rabbits and rodents, but will also take other mammals, birds, reptiles, and some carrion (Kochert et al., 2002). They generally nest in rugged, open habitats with canyons and escarpments, often with overhanging ledges and cliffs or large trees used as cover.

Recent data analysis and population modeling suggest the status of the golden eagle population in the western United States is gradually declining towards a new lower equilibrium of about 26,000 individuals, down from an estimated 34,000 in 2009 and 2014. The future population estimate relies on the continuation of current ecological and biological conditions. The USFWS estimates 3,400 golden eagles die annually from anthropogenic causes in the United States, and suggest a level of sustainable take is approximately 2,000 individuals annually. Additional unmitigated mortality will steepen the rate of decline that the golden eagle population is presently undergoing (USFWS, 2016). Accidental death from collision with man-made structures, electrocution, gunshot, and poisoning are the leading causes of mortality, and loss and degradation of habitat from agriculture, development, and wildfire continues to put pressure on golden eagle populations (CEC, 2010).

In the absence of interference from humans, breeding density is determined by either prey density or nest site availability of breeding season home ranges from several western United States studies showed an average home range of 20–33 square kilometers (7.7 to 12.7 square miles) that ranged from 1.9 to 83.3 square kilometers (0.7 to 32.2 square miles). In San Diego, a study of 27 nesting pairs found breeding ranges to be an average of 36 square miles with a range from 19 to 59 square

miles. Other studies from within and outside the United States include ranges from 9 to 74.2 square miles [range of 14.7 to 26.1 pairs per 1,000 square kilometers, or 386 square miles]) (CEC, 2010).

Nest surveys. Nest surveys performed in 2010, 2012, 2013, 2014, and 2015 encompassed a 10-mile radius of the project site with the objective of identifying and characterizing golden eagle nest activity proximate to the project site. In spring 2010, golden eagle helicopter surveys were conducted to cover the project site, as well as a 10-mile radius from the PPSP boundaries. Three other proposed solar projects were surveyed at this time. The surveys covered 11 mountain ranges between and around Blythe and Desert Center (CEC, 2010) and were conducted following the USFWS February 2010 Interim Golden Eagle Inventory and Monitoring Protocols (Pagel et al., 2010). The surveys found two active golden eagle nests within one territory, approximately 7 miles southwest of the project site in the Chuckwalla Mountains. Additionally, three inactive nests were located approximately 6 miles southwest of the site in the Chuckwalla Mountains; two of these nests were associated with the territory discussed above, the other is likely associated with a territory located further south of the project site (CEC, 2010). Note that a single nesting territory may contain several nests, but only one nest is active in a given year.

In 2012, golden eagle surveys performed for the BLM investigated 397 golden eagle nesting sites in the BLM California Desert District (CDD), which includes the project site (BLM, 2012). Within the entire CDD, 74 sites were determined occupied (as indicated by courtship, a pair present, or the nest being maintained), of which 44 were active (as evidenced by incubation, eggs, brooding, chicks, and fledglings). No nest sites within 10 miles of the project site were found to be occupied. Two golden eagle observations were located greater than 14 miles north within the Little Maria and Granite Mountains, both of which had unknown status with no nesting observed.

In spring and summer 2013, aerial and ground-based surveys identified no active golden eagle nests within the 10-mile radius of the project site, including the Palen Mountains. A single golden eagle observation was recorded: a third-year golden eagle flying around the cliffs in the southwestern portion of the Palen Mountains. Twelve inactive golden eagle nests were recorded (WEST, 2016).

Three potential golden eagle nests were identified in the Palen Mountains; two of the nests were inactive while the third was recently used by red-tailed hawks (BBI, 2013c). No physical sign of active golden eagle nesting activity (e.g., eagles, eagle white wash, fresh nest material, etc.) was observed at any of the previously known nest sites in the Chuckwalla Mountains; however, the altitude that aerial surveys were flown in this region (above 1,500 feet) limited the certainty of aerial survey results. Follow-up ground-based surveys were conducted on foot in the Chuckwalla Mountains in April 2013, to visit and observe potential golden eagle nest sites identified during aerial surveys. No eagle nests were identified during ground-based surveys in the Coxcomb Mountains within the 10-mile radius of the project site. No eagle nests were identified during aerial surveys of the approximately 22-mile length of east-west trending Southern California Edison Devers–Palo Verde 2 power lines within the 10-mile radius of the project site (BBI, 2013a).

During the 2014 surveys, all previously described golden eagle nests and a number of additional nests were monitored. In total, 35 golden eagle nests were documented during the April and July surveys. None of the nests newly identified in 2014 showed signs of recent activity. Moreover,

no golden eagles were observed during aerial or ground-based surveys. During the spring 2015 ground-based surveys, 20 previously observed golden eagle nests and one newly discovered nest were monitored. Sixteen nests showed no signs of occupancy, three nest territories were occupied by red-tailed hawks in early stages of visiting/refurbishing nests, and two nests were being actively occupied by red-tailed hawks incubating or raising. The newly identified nest did not show signs of recent activity. In summary, none of the previously identified golden eagle territories, which were visited in spring 2015, were determined to be occupied by golden eagles (WEST, 2016).

There is no suitable eagle nesting habitat on the project site. The site supports suitable foraging habitat, and golden eagles are likely to forage there either during winter or migration seasons, or (if a nest in the vicinity is occupied) during breeding season. However, prey density is low and foraging may be relatively uncommon. Under ideal conditions, the 10-mile radius around the project site might support up to eight golden eagle territories. In 2013, 2014, and 2015, none of the golden eagle territories near the project site were active or exhibited sign of activity. The observed low numbers of golden eagles within the project study area was consistent between several years of surveys and typical of the California deserts in that there is a relatively high probability that golden eagle nesting territories are vacant or contain inactive nests due to low prey availability (WEST, 2016).

Winter surveys. Surveys were performed in January and February 2013 that involved visual surveys and six baiting stations. A single sub adult was present all five weeks at bait station 6 located in the Palen Mountains north of the site, feeding on the carcass 2-3 days each week. No other golden eagles were observed during any of the six full-length survey sessions (BBI, 2013b).

Prey abundance surveys. In 2013, surveys of 122 miles of transects were performed within and adjacent to the solar facility area, which resulted in observations of 17 black-tailed jackrabbits and one desert cottontail. Observations were concentrated in two general areas: the southeast extent of the project site near the I-10 and a smaller cluster in the north-central part of the project site. Fewer rabbit observations were noted in 2016 than in 2013 during the 791 miles of transects that were performed at more variable daily time periods. The low abundance of rabbits may have been further reduced over the recent several years due to the presence of a local coyote population that is likely subsidized by the nearby agricultural lands. At the time of the surveys, the site had a relatively low density of rabbits. However, the site is suitable for foraging by golden eagles.

Prairie Falcon

The prairie falcon (*Falco mexicanus*) is on the CDFW Watch List and is a USFWS Bird of Conservation Concern. It inhabits dry environments in western North American from southern Canada to central Mexico. It is found in open habitat at all elevations up to 11,000 feet, but is associated primarily with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. It requires cliffs or bluffs for nesting, though will sometimes nest in trees, on power line structures, on buildings, or inside caves or stone quarries. Ground squirrels and horned larks are the primary food source, but prairie falcon will also prey on lizards, other small birds, and small rodents (Zeiner et al., 1990).

Prairie falcons were observed several times during project surveys both as flyovers and perched in the project site (Figure 3.21-7, Special Status Avian Species Observations 2009-2016). The entire project site contains suitable foraging habitat for this species. The project site does not contain suitable nesting habitat, although mountains located over 3 miles away may provide nesting habitat. There are numerous California Natural Diversity Database (CNDDB; CDFW, 2016a) records in the region for this species, including eight records from Little Maria Mountains to the northeast and the Chuckwalla Mountains to the southwest. During golden eagle Phase 2 nest surveys performed jointly for neighboring proposed energy projects, a pair of prairie falcons was documented to be nesting on the same cliff on which a golden eagle nest was located in the Palen Mountains (CEC, 2010).

Short Eared Owl

The short-eared owl (*Asio flammeus*) is a CDFW Species of Special Concern. It is a widespread winter migrant in central and western California, and generally present from September through April. It is an uncommon winter migrant in southern California. Habitats include grasslands, prairies, dunes, meadows, irrigated lands, and wetlands. Short-eared owls generally require dense vegetation for roosting and nesting (Shuford and Gardali, 2008). One short-eared owl was detected on site during surveys in 2013 (WEST, 2016). The project site does not provide suitable nesting habitat, although short-eared owls may be found on site incidentally during migration or foraging events.

Ferruginous Hawk

The ferruginous hawk (*Buteo regalis*) is a CDFW Watch List species and a USFWS Bird of Conservation Concern. It is an uncommon winter resident and migrant at lower elevations and open grasslands in the Central Valley and Coast Ranges, and a fairly common winter resident of grasslands and agricultural areas in southwestern California (Garrett and Dunn, 1981). There are no breeding records from California. This species frequents open grasslands, sagebrush flats, and desert scrub. Prey items include rabbits, rodents, reptiles and amphibians (Zeiner et al., 1990). This species was observed during small bird surveys in 2013 (WEST, 2016). The project site provides potential wintering and migration habitat, but does not provide suitable nesting habitat.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is State listed as threatened and a USFWS Bird of Conservation Concern. The Swainson's hawk occurs as a breeding species in open habitats throughout much of the western United States and Canada, and in northern Mexico. In California, breeding populations of Swainson's hawks occur in desert (the Antelope Valley area), shrub and grasslands, and agricultural habitats; however, most of the state's breeding sites are in the Great Basin and Central Valley (Woodbridge, 1998). These birds favor open habitats for foraging, and are near-exclusive insectivores as adults, but may also forage on small mammals and reptiles. This species was observed during bird surveys in 2013 (WEST, 2016). The project site provides migration habitat, but does not provide suitable nesting habitat.

American Peregrine Falcon

The American peregrine falcon (*Falco peregrinus anatum*) is listed as a CDFW Fully Protected species and a USFWS Bird of Conservation Concern. It is distributed worldwide. In California, its range is primarily central to northern California, with wintering habitat located in southern California. Migrants occur along the coast and in the western Sierra Nevada in spring and fall. It breeds mostly in woodland, forest, and coastal habitats, and favors open landscapes with cliffs as nest sites. Their diet consists primarily of birds and bats (Zeiner et al., 1990). This species was located during bird-use count surveys in 2013 (WEST, 2016). The project site provides suitable foraging habitat, but no suitable nesting habitat.

Northern Harrier

Northern harrier (*Circus cyaneus)* is a CDFW Species of Special Concern. It inhabits most of California at various times of the year, found in elevations up to 9,800 feet. Northern harriers frequent meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands. They are a widespread winter resident and migrant in suitable habitat. They primarily feed on small mammals, birds, frogs, small reptiles, crustaceans, and insects (Zeiner et al., 1990). Northern harriers were found during previous surveys on the project site (WEST, 2016). There is suitable foraging, but no suitable nesting habitat on the project site. The PSPP disturbance area contains suitable foraging habitat during migration/winter and lacks suitable nesting habitat for northern harrier (BLM, 2011).

Songbirds

Loggerhead Shrike

The loggerhead shrike (*Lanius ludovicianus*) is a CDFW Species of Special Concern and a USFWS Bird of Conservation Concern. Loggerhead shrikes are small predatory birds that are uncommon residents throughout most of the southern portion of their range, including southern California. In southern California, they are generally much more common in interior desert regions than along the coast. This species can be found within lowland, open habitat types, including creosote scrub and other desert habitats, sage scrub, non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Fences, posts, or other potential perches are typically present. Loss of habitat to agriculture, development, and invasive species is a major threat; this species has shown a significant decline in the Sonoran Desert (Humple, 2008). Loggerhead shrikes initiate their breeding season in February and may continue with raising a second brood as late as July; they often re-nest if their first nest fails or to raise a second brood. In general, loggerhead shrikes prey upon large insects, small birds, amphibians, reptiles, and small rodents over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding (Yosef, 1996).

The project site contains suitable nesting and foraging habitat for loggerhead shrike (CEC, 2010). Loggerhead shrikes were observed within the project site during spring 2009 and 2010 surveys (see Figure 3.21-7, Special Status Avian Species Observations 2009-2016). The species also was observed during spring 2013 avian field survey along the gen-tie line. Loggerhead shrike was also recorded during the 2016 surveys.

Le Conte's Thrasher

In California, Le Conte's thrasher (*Toxostoma lecontei*) is a CDFW Species of Special Concern and USFWS Bird of Conservation Concern. It is a resident in the San Joaquin Valley and the Mojave and Colorado Deserts (Weigand and Fitton, 2008). This pale gray bird occurs in desert flats, washes and alluvial fans with sandy or alkaline soil and scattered shrubs. Preferred nest substrate includes thorny shrubs and small desert trees, and nesting rarely occurs in monotypic creosote scrub habitat or Sonoran desert woodlands (Prescott, 2005). Breeding activity occurs from January to early June, with a peak from mid-March to mid-April. Le Conte's thrashers forage for food by digging and probing in the soil. They eat arthropods, small lizards and snakes, and seeds and fruit; the bulk of their diet consists of beetles, caterpillars, scorpions, and spiders.

Suitable habitat for Le Conte's thrasher is located in the project site, primarily within desert dry wash woodland. This species was observed during 2009 surveys, including avian-specific surveys conducted between 2010 and 2013 (CEC, 2010; WEST, 2016), as well as in spring 2016 (Figure 3.21-7, Special Status Avian Species Observations 2009-2016).

California Horned Lark

The California horned lark (*Eremophila alpestris actia*) is a CDFW Watch List species. It is found throughout California except the north coast, and is less common in mountainous areas. This species prefers open areas that are barren or with short vegetation including deserts, brushy flats, and agricultural areas. Eggs are laid March to early June, and this species frequently lays a second clutch (Zeiner et al., 1990). There are numerous records for this species in western Riverside County (CDFW, 2016a). The project site contains suitable habitat for this species, especially creosote bush scrub, and it was observed frequently on the project site, including the gen-tie line, during 2009 and 2010 surveys and during spring 2013 avian field surveys (Figure 3.21-7, Special Status Avian Species Observations 2009-2016).

Gila Woodpecker

Gila woodpecker is State listed as endangered, a BLM Sensitive species, and a USFWS Bird of Conservation Concern. Gila woodpecker is predominantly a permanent resident across its range in areas of southeast California, southern Nevada, central Arizona, extreme southwest New Mexico, and parts of Mexico. The Gila woodpecker is an uncommon to fairly common resident in southern California along the Colorado River and near Brawley, at the southern end of the Salton Sea in Imperial County (Garrett and Dunn, 1981). Suitable habitats include riparian woodlands, uplands with concentrations of large columnar cacti, old-growth xeric-riparian wash woodlands, and urban or suburban residential areas (Rosenberg et al., 1987; Edwards and Schnell, 2000). Gila woodpeckers prefer large patches (greater than 49 acres) of woody riparian vegetation for nesting, but the species has been documented nesting in various habitat types, such as desert washes (McCreedy, 2008) and residential areas (Mills et al., 1989). Suitable habitat within the project site would be in desert washes, but would be expected to more readily use off-site palm trees than on-site palo verde or ironwood trees. Surveys conducted in 2013 reported one incidental observation of Gila woodpecker over a mile from the project site (WEST, 2016). The probability of this species nesting on the project site is low because the site supports only sparse riparian woodland habitat and is located on the periphery of the geographic range for this species.

Black-tailed Gnatcatcher

Black-tailed gnatcatcher (*Polioptila melanura)* is a CDFW Watch List species. It is a permanent resident from southeastern California and Arizona to southern Texas and northern Mexico. It is found in arid scrublands, desert brush, and dry washes among creosote bush, ocotillo, mesquite, palo verde, and cactus. They live in pairs all year-round, defend their territory, and forage for small insects in low shrubs and trees. Black-tailed gnatcatchers were observed in 2013 and 2016 on the project site. The project site contains suitable foraging and potential nesting habitat for this species.

The PSPP PA/FEIS (BLM, 2011) stated that the PSPP disturbance area did not support dense scrub suitable as nesting habitat for black-tailed gnatcatchers. However, this species was commonly detected during 2013 avian surveys and an active nest was observed in the dry wash woodland in 2016.

Purple Martin

The purple martin (*Progne subis*) is a CDFW Species of Special Concern. Its historical breeding range includes the non-desert portion of southern California (although regional populations have shrunk dramatically). Purple martins are most abundant near wetlands and other water sources. Purple martin was observed migrating through the project site (as shown in Figure 3.21-7, Special Status Avian Species Observations 2009-2016), but is not expected to extensively use the project site. There are six CNDDB (CDFW, 2016a) records for this species from western Riverside County, none from the desert, and the most recent of which include nesting records from 1984 and 1993.

Sonora Yellow Warbler

The Sonora yellow warbler (*Setophaga petechia sonorana*) is a CDFW Species of Special Concern and a USFWS Bird of Conservation Concern. It occurs principally as a migrant and summer resident from late March through early October, and breeds from April to late July (Dunn and Garrett, 1997). The Sonora yellow warbler breeds only along the lower Colorado River in California, and from southern Arizona and southwest New Mexico to north-central Mexico and possibly the Colorado River Delta. It arrives to breed on the lower Colorado River in early April and nests mainly from mid-May through July (Rosenberg et al., 1991). It generally occupies riparian shrubs and trees close to water. Its diet includes ants, bees, wasps, caterpillars, beetles, true bugs, flies, and spiders (Shuford and Gardali, 2008). Sonora yellow warblers were observed during bird count surveys in 2013 (WEST, 2016). The project site contains suitable foraging habitat (during migration), but no suitable nesting habitat. The PSPP PA/FEIS (BLM, 2011) stated that the PSPP disturbance area did not support suitable nesting habitat for Sonora yellow warbler and that this species was not observed during surveys. This species was detected during avian surveys in 2013 and in 2016 and may be present during migration; however, Sonora yellow warbler is not expected to nest within the project site due to lack of typical nesting habitat.

Vaux's Swift

Vaux's swift (*Chaetura vauxi*) is a CDFW Species of Special Concern. It is a summer resident of northern California and a fairly common migrant throughout most of the state in spring and fall. It roosts in hollow trees and snags, and often in large flocks. It feeds exclusively on flying

insects (Shuford and Gardali, 2008). A Vaux's swift was observed during bird surveys in 2013 and 2016. The project site provides suitable foraging habitat during migration, but the species does not nest in the region.

Mountain Plover

Mountain plover (*Charadrius montanus)* is a CDFW Species of Special Concern and a USFWS Bird of Conservation Concern. They are found in semi-arid plains, grasslands, and plateaus. They use open grasslands, plowed fields with little vegetation, and open sagebrush areas. Winter habitats include desert flats, and plowed fields. Mountain plovers are insectivores, feeding primarily on large ground-dwelling insects, including grasshoppers, beetles, and crickets (Shuford and Gardali, 2008). One mountain plover was observed during bird use count surveys in 2013 (WEST, 2016). The project site provides suitable habitat for winter or migration, but is not likely to support suitable nesting habitat.

Yellow-breasted Chat

The yellow-breasted chat (*Icteria virens*) is a CDFW Species of Special Concern. It is an uncommon summer resident and migrant in coastal California, in foothills of the Sierra Nevada, and within the Colorado Desert is known only from the Salton Sea and Colorado River. In southern California, chats breed locally on the coast, and very locally inland (Garrett and Dunn, 1981). During migration, they may be found in lower elevations of mountains in riparian habitat (McCaskie et al., 1979). Yellow-breasted chat was recorded during small bird count surveys that were conducted in 2013, likely during migration (WEST, 2016). The yellow-breasted chat may be found incidentally on site during migration, but suitable nesting habitat is not present.

Crissal Thrasher

Crissal thrasher (*Toxostoma crissale*) is a CDFW Species of Special Concern. It is a resident of southeastern deserts, occupying dense shrublands in desert riparian and desert wash habitats, including mesquite, ironwood, and acacia. It primarily forages on the ground, feeding on invertebrates, berries, and seeds (Shuford and Gardali, 2008). One observation of Crissal thrasher was recorded during small bird count surveys in 2013 (WEST, 2016). The project site provides limited but suitable nesting and foraging habitat primarily associated with dry wash woodlands.

Shorebirds and Waterfowl

Several special status shorebirds and waterfowl were detected during surveys at offsite agricultural ponds performed in 2013 to evaluate avian risks related to the PSEGS technology. These species include American white pelican (*Pelecanus erythrorhynchos*), sandhill crane (*Grus canadensis*), redhead (*Aythya americana*), and black tern (*Chlidonias niger*).

Nesting Birds

Common and special status nesting birds may be found throughout the project vicinity, including within native vegetation, adjacent agricultural lands, open areas on the ground. Certain bird species often nest on structures and equipment, and are likely to nest on solar facility structures and construction vehicles or equipment left inactive for short periods (e.g., a few days). Birds,

nests, and nestlings are generally protected under the Migratory Bird Treaty Act and California Fish and Game Code, regardless of other conservation designations.

Other Birds

Other special status bird species may be seen flying over or through the project site incidentally or during migration. Additional species documented during 2013 surveys (WEST, 2016) are bank swallow (*Riparia riparia*; State listed threatened), vesper sparrow (*Pooecetes gramineus*; CDFW Species of Special Concern), willow flycatcher (*Empidonax traillii*; State listed endangered), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*; CDFW Species of Special Concern). Although there is no suitable breeding or wintering habitat for western yellow-billed cuckoo, Bell's vireo, or Ridgeway's [Yuma Ridgway's] rail within or near the project site, these species have been detected at existing utility-scale solar projects in the southern California desert. As such, any of them may infrequently fly over the site or stop over on-site briefly during migration or dispersal periods. Additional information is provided in Appendix E of the BRTR (Ironwood, 2017).

Mammals

Yuma Mountain Lion

In the NECO planning area, mountain lions primarily inhabit the low mountains and extensive wash systems in and around Chuckwalla Bench, Chuckwalla Mountains, Chocolate Mountains, Picacho Mountains, Milpitas Wash, Vinagre Wash, and other washes in that area. Mountain lions typically occur in habitat areas with extensive, well-developed riparian or shrubby vegetation interspersed with irregular terrain, rocky outcrops, and community edges. Mountain lions are restricted to the southern Colorado Desert from Joshua Tree National Park south and east to the Colorado River. Burro deer, the primary prey item, are known to spend the hot summer and fall in riparian areas along the Colorado River and in dense microphyll woodlands near the Coachella Canal. The project site provides suitable habitat and burro deer (prey source) are present, but no definitive sign of mountain lion was observed during surveys.

American Badger

The American badger is a CDFW Species of Special Concern. It is associated with dry open forest and shrub and grassland communities with an adequate burrowing rodent population and friable soils. Badgers generally are associated with treeless regions, prairies, parklands, and cold desert areas (Zeiner et al., 1990). Badgers inhabit burrows and often predate and forage on other small mammals that inhabit burrows, as evidenced by claw marks along the edges of existing burrows. Most of the CNDDB records from the Palo Verde Valley area of Riverside County are prior to 1960; the closest to the project site is northwest of Palo Verde approximately 12 miles southeast of the project site (CDFW, 2016a; CEC, 2010).

The entire project site is considered suitable habitat for badgers. Badger sign was found during spring 2009 field surveys; burrow predation evidence by badgers was found throughout the project site and buffer (Figure 3.21-8, American Badger Observations 2009-2016). Surveyors observed five badger dens and over 10 small mammal burrows showing evidence of predation by badgers, and a badger skull was observed within the buffer, south of I-10. No badgers were

observed during 2013 surveys of the modified linear components. The 2016 surveys noted one den with indication of badger use near the western boundary of the solar facility. The entire PSPP disturbance area contains suitable habitat for American badger.

Desert Kit Fox

Desert kit fox (*Vulpes macrotis arsipus*) is protected by the California Code of Regulations (Title 14, CCR: §460) and Fish and Game Commission Section 4000 as a fur-bearing mammal. Title 14 of the California Code of Regulations, Section 460, stipulates that desert kit fox may not be taken at any time. Desert kit foxes are fossorial mammals that occur in arid open areas, shrub grassland, and desert ecosystems within the Mojave Desert. Desert kit fox typically occur in association with their prey base, which includes small rodents (primarily kangaroo rats), rabbits, lizards, insects, and in some case immature desert tortoises (Zeiner et al., 1990). Dens that support multiple entrances provide shelter, escape, cover, and reproduction, but desert kit fox may utilize single burrows for temporary shelter. Litters of one to seven young are typically born in February through April (McGrew, 1979).

In 2011, the first known cases of canine distemper virus (CDV) were observed in desert kit foxes about 20 miles west of Blythe on public lands managed by the BLM for the Genesis Solar Energy project. CDV is transmitted by contact with body fluids containing the virus, and can be transmitted among multiple carnivore species. The outbreak was thought to have originated from an infected host animal, such as a feral or domestic dog, American badger, or other carnivore. Desert kit foxes were captured for disease testing at several project sites within the region (including Desert Sunlight, Genesis Ford Dry Lake, SCE's Colorado River Substation, and PSPP) due to a concern that the spread of CDV within the kit fox population was facilitated by project-related displacement of infected animals. CDV was identified at the two later sites, which span a distance of about 40 miles on the I-10 corridor within the Chuckwalla Valley (BLM, 2010). The CDFW Wildlife Investigations Lab continues to monitor the health of desert kit foxes and is attempting to characterize the spread and significance of the disease on regional kit fox populations.

During spring 2009 surveys, desert kit fox burrows, burrow complexes, and scat were observed throughout the project site and buffer within desert wash and upland scrub habitats. There were approximately 71 burrows and burrow complexes recorded. In fall 2009, desert kit fox scat and a burrow were observed along the gen-tie line (Figure 3.21-9, Desert Kit Fox Observations 2009-2016). During spring 2010 field surveys, two kit fox complexes were found in the project site and four burrow complexes were found in the buffer area. No kit fox dens were observed during spring 2013 surveys of the modified linear features (Karl, 2013). Spring 2016 surveys were performed to update site conditions and recorded 14 desert kit fox burrows, 20 pieces of scat, and 18 sets of desert kit fox tracks within the project site. Spring 2016 surveys along the gen-tie found 4 desert kit fox burrows, 3 scat, and 3 tracks. One additional active kit fox complex was recorded approximately 30 m outside the southeast project boundary in August 2016.

The reduction in the number of observations from the 2009 and 2010 recorded data could be a result of changing conditions on the project site. Desert kit fox distribution is dynamic and would be expected to change over time under natural conditions due to available prey and other environmental factors. As noted above, the adjacent date palm farm may subsidize the local

coyote population. Coyotes prey on kit fox pups, and the presence of coyotes could dissuade desert kit fox from their previous recorded activity areas.

CDFW trapping and radio tracking of desert kit fox in the region during 2012 and 2013 indicate that foxes were using the area south of I-10 and the Southern California Edison Devers–Palo Verde 2 transmission corridor and utilizing the project site (M. Rodriguez, CDFW, pers. comm.). During the trapping program, seven dens that exhibit varying level of activity were documented within the project site. The entire project disturbance area contains suitable habitat for desert kit fox.

Desert Bighorn Sheep

The desert bighorn sheep (*Ovis canadensis nelsoni*) is a BLM Sensitive Species. The desert bighorn sheep is found from the Transverse Ranges through most of the desert mountain ranges of California, Nevada, and northern Arizona to Utah. Essential habitat for bighorn sheep includes steep, rocky slopes of desert mountains and areas where surface water is available for drinking. In the spring, when annual plants are available, bighorn tend to disperse downhill to bajadas and alluvial fans to forage (CEC, 2010).

Over the past 140 years, bighorn sheep have suffered considerable population declines throughout their range. One contributing factor is that meta-populations have been fragmented by roads and other barriers, with a resulting decline in genetic diversity (Bleich et al., 1996, Epps et al., 2005). Disease (possibly resulting from contact with domestic sheep), drought, predation, anthropogenic factors, and loss of surface water sources may contribute to the viability of existing sheep populations (Wehausen, 2005).

Two metapopulations of bighorn sheep occur within the NECO planning area, the Southern Mojave and Sonoran. Within these metapopulations, there are smaller, isolated subpopulations of bighorn sheep known as demes. Nine demes occur in the Sonoran metapopulation. The NECO Plan addresses the conservation of the bighorn sheep through the designation of Bighorn Sheep WHMAs; but this is now superseded by DRECP designations that amended the CDCA. This area overlays the entire range of their occurrence and movement corridors. Bighorn sheep metapopulations have been fragmented by highways, roads, railroads, and aqueducts. The I-10 and Interstate 40 represent major obstacles to bighorn sheep movements. Other transportation corridors including Highways 66, 62, 177, 95, and 78, the AT&SF Railroad (parallel to Old Highway 66) and the Eagle Mountain Railroad (proposed for reactivation), inhibit bighorn sheep movements between demes. Nevertheless, bighorn sheep successfully cross these and other linear features such as transmission lines and fences (CEC, 2010).

The project site is located south of occupied bighorn sheep formerly designated WHMAs in the Palen, Granite, and Coxcomb Mountains. Recent surveys suggest that bighorn sheep may occur in the Little Maria Mountains, further to the northeast of the project site (Wehausen, 2009). Desert bighorn sheep have been documented in the Chuckwalla Mountains southwest of the project site and the Palen, Granite, Coxcomb, and Eagle mountain ranges to the north, west, and east. Six rams were observed in the Coxcomb Mountains during Phase 2 golden eagle surveys performed jointly for various energy projects during 2010. The project site is located over 3 miles southwest from suitable mountainous habitat in the Palen Mountains and over 4 miles from suitable habitat in the Chuckwalla Mountains (BLM, 2015). Bighorn sheep may disperse

through these mountain ranges typically whenever forage and water conditions are suitable (CEC, 2010).

No sign or evidence of desert bighorn sheep were found during field surveys; however, scat is often difficult to distinguish from burro deer. While the project site supports possible inter-mountain habitat for desert bighorn sheep, the potential linkage situated between suitable big-horn sheep mountainous habitat supports a low-intactness value near the I-10 due to restricted movement opportunities associated with the freeway (BLM, 2015).

The entire PSPP disturbance area does not support evidence of desert bighorn sheep and does not occur within a known movement corridor.

Burro Deer

Burro deer (*Odocoileus hemionus eremicus*) is a subspecies of mule deer (*Odocoileus hemionus*) that inhabits desert dry wash woodland communities in the Colorado region of the Sonoran Desert near the Colorado River. Some burro deer are resident along the Colorado River, while others are transient and move into desert areas in response to seasonal increases in water and forage. During hot summers, burro deer concentrate along the Colorado River or the Coachella Canal where water developments have been installed and where microphyll woodland is dense and provides good forage and cover. With late summer thundershowers and cooler temperatures, burro deer move away from the Colorado River and Coachella Canal into larger washes or wash complexes in the foothills and nearby mountains (BLM CDD, 2002).

During 2009 field surveys, burro deer scat and tracks were observed in rocky substrate and deep washes including the western, central, and eastern desert washes that transect the project site. Deer sign was found within the washes and 150-foot-wide box culverts that convey the washes underneath I-10. Burro deer are also known to use a culvert associated with the westernmost project site wash to access a water source at the adjacent agricultural property (CEC, 2010). The full project site supports suitable habitat for burro deer. Surveys conducted in 2013 found burro deer scat and tracks in washes east of the proposed gen-tie alignment and adjacent to I-10, and tracks were observed in the natural gas line extension buffer zone proposed for PSEGS (Karl, 2013). Surveys conducted in spring 2016 found scat and tracks throughout the project site.

Bats

Bat roosts are found in the vicinity of the project site in the McCoy Mountains, Eagles Nest Mine (Little Maria Mountains), and Paymaster Mine located within about 10 miles (16 km) of the project site (CEC, 2010). During roost surveys performed in 2009 and 2013, one roost site was recorded under the I-10 bridge across Corn Springs Road. No other bat roosts were identified (WEST, 2016). Most bridges surveyed in the project vicinity were smooth cement and provide minimal roosting habitat. Roosting opportunities for several bat species (e.g., canyon bat and California myotis) are available in tree cavities, soil crevices and rock outcroppings, primarily within dry desert wash woodland habitats. Surveys performed in 2016 noted many large ironwood trees that had the potential to serve as roost sites; however, no sign of bats were detected. It is not expected that any special status bat species would have a substantial roost on the project site because habitat features most associated with these species (e.g., rock ledges, cliffs, large tree hollows, mine shafts) do not occur on site. The possibility exists for incidental

observations for these species. Several common and special status bat species were detected during acoustic monitoring and likely utilize habitats within the project site for foraging, especially when water is present within the desert washes and insects are more abundant (CEC, 2010; WEST, 2016; Brown and Rainey, 2014).

Seven bat species were detected during the spring and fall 2013 acoustic surveys; four of these are special status species (pallid bat, western mastiff bat, western yellow bat, and big free-tailed bat). Two additional special status bat species (California leaf-nosed bat and Townsend's big-eared bat) typically have low intensity echolocation signals and may not have been acoustically detectable. Several call sequences were associated with the special status species pocketed free-tailed bat; however, the calls lacked features for confirmation of species (WEST, 2016).

Seven special status bat species may forage on or near the project site and were detected or possibly detected during acoustic surveys in 2013. These species are described below. Suitable, but limited, roosting habitat may occur for several of these species within the dry wash woodland habitat on the project site. Other special status bat species known from the region typically inhabit rocky sites and would not be expected to use the project site for roosting.

Two additional special status bat species (cave myotis and Yuma myotis) were described in the PSPP PA/FEIS (BLM, 2011) as having the potential to occur in the PSPP disturbance area; however, these species were not detected during acoustic surveys in 2013.

Pallid Bat. The pallid bat (*Antrozous pallidus*) is a CDFW Species of Special Concern and BLM Sensitive species. It is a locally common species throughout California, and a year-round resident in most of the range. It occupies a wide variety of habitats at elevations less than 6,000 feet including grasslands, shrublands, woodlands, and forests, and is most common in open, dry habitats with rocky areas for roosting. Pallid bats roost in cliffs, caves, crevices, mines, hollow trees, and various human-made structures (Zeiner et al., 1990). The PSPP PA/FEIS (BLM, 2011) stated that the PSPP disturbance area contained suitable foraging and roosting habitat for the pallid bat. The pallid bat was detected during acoustic surveys in 2013 (WEST, 2016). This species may forage and roost within the project site, primarily within the dry wash woodland.

Townsend's Big-eared Bat. Townsend's big-eared bat (*Corynorhinus townsendii*) is a CDFW Species of Special Concern, BLM Sensitive Species, and was a recent candidate for state listing prior to CDFW recommending that listing was not warranted in a status review it prepared for the Fish and Game Commission in June 2016 (CDFW, 2016b). It roosts in caves, mines, abandoned dwellings, and large basal hollows of large trees (e.g., redwoods). Townsend's big-eared bat occurs from sea level to approximately 9,000 feet elevation within a range of habitats. It typically forages along streams and within woodland habitats.

The PSPP PA/FEIS (BLM, 2011) stated that the PSPP disturbance area contained suitable foraging habitat, but lacked suitable roosting habitat for Townsend's big-eared bat due to absence of suitable structures (e.g., abandoned buildings) or natural features (e.g., caves and large hollowed trees). Townsend's big-eared bat was not detected during acoustic surveys in 2013, but this species typically has low intensity echolocation signals and thus may not have been acoustically detectable (WEST, 2016).

Western Mastiff Bat. The western mastiff bat (*Eumops perotis californicus*; also called greater bonneted bat) is a CDFW Species of Special Concern and BLM Sensitive Species. It is found through the southwest U.S. and into Mexico. It is widespread in California, occurring year-round primarily in central and southern California (Zeiner et al., 1990). The western mastiff bat is found in a range of habitats, including coastal, forests, woodland, and desert scrub where roosting sites are available (Pierson and Rainey, 1998). Roosting habitat typically consists of rocky crevices in canyons and cliffs with vertical or nearly vertical walls. The majority of roost sites are at least 2 meters above the ground (e.g., on cliff faces) and lacking obstructions. The western mastiff bat was detected during acoustic surveys in 2013, but less frequently than most other species (WEST, 2016). The PSPP disturbance area contains suitable foraging habitat for the western mastiff bat, but suitable roosting habitat for this species is absent.

Western Yellow Bat. The western yellow bat (*Lasiurus xanthinus*) is a CDFW Species of Special Concern. It is found in Arizona, New Mexico, Mexico, and year-round in California. It is found in arid regions, in riparian, desert riparian, desert wash and palm oasis habitat. The western yellow bat is insectivorous, and roosts and feeds in palm oases and riparian habitats (Zeiner et al., 1990). The PSPP PA/FEIS (BLM, 2011) did not address the western yellow bat. It was detected during acoustic surveys in 2013, but only at the artificial pond located near the date palm farm outside the northwestern boundary of the project site (WEST, 2016). The project site lacks typical foraging and roosting habitat for western yellow bat; however, it may be found on the project site due to the proximity of the offsite date palm farm.

California Leaf-nosed Bat. California leaf-nosed bat (*Macrotus californicus*) is a CDFW Species of Special Concern and BLM Sensitive species. It occurs in the deserts of California, southern Nevada, Arizona, and south to northwestern Mexico. In California, it is known from eastern San Bernardino, Riverside, and San Diego Counties and all Imperial County. California leaf-nosed bat relies on caves and mines for roosting habitat. Foraging habitat typically consists of riparian and desert wash habitats. The PSPP PA/FEIS (BLM, 2011) stated that the PSPP disturbance area contained suitable habitat for California leaf-nosed bat. California leaf-nosed bat was not detected during acoustic surveys in 2013, but it typically has low intensity echolocation signals and thus may not have been acoustically detectable (WEST, 2016). It may forage within the project site, but it is not expected to roost due to absence of suitable caves and mines.

Cave Myotis. Cave myotis (*Myotis velifer*) is a CDFW Species of Special Concern and BLM Sensitive species. The cave myotis occurs from western Texas, to southern Nevada, southeastern California (only along the Colorado River), southward into Mexico, and is also widely distributed in Arizona. It is found primarily at lower elevations (the Sonoran and Transition life zones) of the arid southwest in areas dominated by creosote bush, palo verde, and cactus. It is a "cave dweller" and caves are the main roosts although it may also use mines, buildings, and bridges for roosts. Cave myotis may forage within the project site. The nearest CNDDB record is from 2002 near the I-15 bridge over the Colorado River in Blythe where individual Cave myotis bats were detected acoustically during April 2002 (CDFW, 2016a).

Yuma Myotis. Yuma myotis (*Myotis velifer*) is a BLM Sensitive species. It ranges across the western one-third of North America from British Columbia, Canada, to Baja California and southern Mexico. Yuma myotis is usually associated with permanent sources of water, typically rivers and streams, feeding primarily on emergent aquatic insects. Yuma myotis also use tinajas

in the arid west. It occurs in a variety of habitats including riparian, arid scrublands and deserts, and forests. It roosts in bridges, buildings, cliff crevices, caves, mines, and trees. Yuma myotis may roost and forage within the project site. The nearest CNDDB record is from 2002 near the Blythe bridge over the Colorado River where it was detected acoustically during April 2002 (CDFW, 2016a).

Pocketed Free-tailed Bat. The pocketed free-tailed bat (*Nyctinomops femorosaccus*) is a CDFW Species of Special Concern. It occurs in western North America, from southern California, central Arizona, southern New Mexico, to western Texas. It is more commonly found in Mexico (WBWG, 2016). The pocketed free-tailed bat has been documented in Riverside, San Diego, and Imperial Counties. Typical habitats include pinyon-juniper woodlands, desert scrub, desert succulent shrub, desert riparian, desert wash, alkali desert scrub, Joshua tree, and palm oasis. Roosting habitat typically includes rock crevices associated with granite boulders, cliffs, or rocky canyons at a height suitable for approach and takeoff (CDFW, 2016a). Pocketed free-tailed bats occur in the desert from March through August, when they then migrate out of the area (BLM, 2011). The PSPP PA/FEIS (BLM, 2011) stated that the PSPP disturbance area contained suitable foraging and roosting habitat for the pocketed free-tailed bat. It was possibly detected during acoustic surveys in 2013; several call sequences were associated with either hoary or pocketed free-tailed bats and lacked features for confirmation of species (WEST, 2016).

Big Free-Tailed Bat. The big free-tailed bat (*Nyctinomops macrotis*) is a CDFW Species of Special Concern. Its distribution is the southwestern U.S. to northern South America, generally from sea level to 8,000 feet in elevation. It is rare in California and roosts in rock crevices, tree cavities, and man-made structures. It is known to wander out of its normal range in autumn (Zeiner et al., 1990). The PSPP PA/FEIS (BLM, 2011) stated that the PSPP disturbance area contained suitable foraging and roosting habitat for the big free-tailed bat. It was detected during acoustic surveys in 2013, but with the lowest detection rate of all bat species (WEST, 2016). The big free-tailed bat may forage and roost within the project site, primarily within the dry wash woodland.

Chapter 4

Environmental Consequences

CHAPTER 4
Environmental Consequences

4.1 Introduction to Impact Analysis and Cumulative Scenario

This chapter assesses environmental consequences or impacts that would result from the implementation of the Project and the alternatives described in Chapter 2. These analyses consider direct, indirect, and cumulative impacts of the Project and alternatives, including both short-term impacts during construction and decommissioning, and long-term impacts during operations.

The impact analysis presented in Chapter 4 of this Supplemental EIS/EIR builds on the National Environmental Policy Act (NEPA) analysis completed for the Palen Solar Power Project (PSPP) in BLM's Proposed Resource Management Plan Amendment and Final EIS (published May 13, 2011). The analysis also considers the California Environmental Quality Act (CEQA) analysis completed for the PSPP in September of 2010: the California Energy Commission's Revised Staff Assessment (RSA). This impact analysis supplements that presented in those two documents, but incorporates updates or changes based on the different solar technology and new information now available.

This chapter also identifies mitigation measures to address adverse impacts and summarizes the residual and unavoidable adverse impacts on a resource-by-resource basis. Mitigation measures are taken directly from the BLM's 2011 Final EIS and CEC 2010 Revised Staff Assessment, the documents that analyzed the previous solar projects at the Palen site. They are modified as needed to make them relevant to the photovoltaic technology or other project changes that have been made.

The Applicant has included some of the Conservation and Management Actions (CMAs) developed in the CDC Plan, as amended by the Desert Renewable Energy Conservation Plan (DRECP), as Applicant Proposed Measures (APMs). These APMs are considered to be part of the project description, and the impact analysis assumes their implementation. The APMs are listed in Section 2.2.7 (Chapter 2).

4.1.1 Analytical Assumptions

The following assumptions pertain to the impact analysis for the Palen Solar Project:

- The laws, regulations, and policies applicable to BLM authorizing ROW grants for renewable energy development facilities would be applied consistently for all action alternatives.
- The proposed facility would be constructed, operated, maintained, and decommissioned as described for the Proposed Action.

- Short-term impacts are those expected to occur during the construction phase and the first few years of operation and maintenance (generally about 5 years), as well as the end-of-project decommissioning phase. Long-term impacts are those that would start after the first few years of operation, and would continue throughout operation.

4.1.2 Types of Effects

NEPA Requirements. NEPA requires that the impact analysis in each EIS consider the potential impacts from actions that would have direct, indirect, residual and cumulative effects. Effects and impacts as used in this document are synonymous and could be beneficial or adverse.

Direct effects are caused by the action and occur at the same time and place as the action; indirect effects are caused by the action and occur later in time or further in distance, but are still reasonably foreseeable. Residual effects are effects that remain after mitigation measure have been applied. Cumulative impacts are those effects resulting from the incremental impacts of an action when combined with other past, present, and reasonably foreseeable future actions (regardless of which agency or person undertakes such actions).

Short-term impacts occur only for a short time after implementation of a management action; for example, construction noise impacts from construction activities would be considered short-term. By contrast, long-term effects occur for an extended period after implementation of a management action; for example, operational noise during power plant operations would be a long-term impact, as it would last for as long as the solar energy plant is in operation. Short-term and long-term impacts are defined in Section 4.1.1, "Analytical Assumptions," above.

Section 1502.16 of the Council on Environmental Quality (CEQ) regulations establishes the scientific and analytic basis for the comparison of alternatives (including the Proposed Action) as described in Section 1502.14 of Title 40 of the Code of Federal Regulations. PA/FEIS Chapter 4, Environmental Consequences, consolidates the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of this EIS and as much of Section 102(2)(C)(iii) as is necessary to support the comparisons. The discussion includes the environmental impacts of the alternatives, including any adverse environmental effects which cannot be avoided, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources that would be involved in the proposal should it be implemented.

CEQA Requirements. CEQA requires analysis of "project-specific effects," meaning all the direct or indirect environmental effects of a project other than cumulative effects and growth-inducing effects. CEQA Guidelines Section 15130 requires that an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable.

4.1.3 CEQA Significance Determinations

Because this is a joint NEPA and CEQA document, it is written specifically to comply with the significance determination requirements of the CEQA Guidelines,[1] including consideration of

[1] Public Resources Code Section 21000 et seq., including the Guidelines for Implementation of the CEQA, Title 14 California Code of Regulations section 15000 et seq.

CEQA Significance Criteria. The CEQA analysis is based on the significance criteria listed in the CEQA Environmental Checklist, Appendix G of the CEQA Guidelines; CEQA significance determinations and conclusions are made in the final section of each discipline's analysis in this Chapter. Under NEPA, there is no requirement to determine significance when analyzing impacts; rather, the BLM must take a "hard look" at the impacts of the proposed project and its alternatives and determine whether they are adverse. Therefore, the determinations of impact significance in this document are determinations under CEQA, not NEPA.

4.1.4 Section Organization

As described in Section 3.1.2, the resource, resource uses, and BLM program areas that are not affected by the Proposed Action or present within the impact assessment area are not included in this SEIS.

Each section within Chapter 4 is organized as follows:

- 1: Impact Assessment Methodology (including explanation for mitigation measures and APMs)
- 2: Direct and Indirect Effects (including all analysis of Proposed Action and alternatives)
- 3: Cumulative Effects
- 4: Mitigation Measures
- 5: Residual Effects after Implementation of Mitigation
- 6: Unavoidable Adverse Impacts
- 7: CEQA Significance Thresholds and Determinations

4.1.5 Cumulative Impact Scenario

4.1.5.1 Regulatory Requirements and Methodology

NEPA Requirements

A cumulative impact is the impact on the environment that results from the incremental impact of a proposed action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or nonfederal) or person undertakes such other actions (40 Code of Federal Regulations [CFR] Section 1508.7). Further, "[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR Section 1508.7). The CEQ recommends that agencies "look for present effects of past actions that are, in the judgment of the agency, relevant and useful because they have a significant cause-and-effect relationship with the direct and indirect effects of the proposal for agency action and its alternatives" (36 CFR Section 220.4[f]).

The intensity, or severity, of the cumulative impacts analysis considers the magnitude, geographic extent, duration and frequency of the effects (CEQ, 1997). The magnitude of the effect reflects the relative size or amount of the effect; the geographic extent considers how widespread the effect may be; and the duration and frequency refer to whether the effect is a one-time event, intermittent

or chronic (CEQ, 1997). Varying degrees of information exist about projects within the cumulative scenario. Therefore, for resource areas where quantitative information is available, a quantitative analysis is provided. By contrast, where quantitative information is not available, a qualitative analysis is provided. Consistent with BLM Handbook Section 6.8.3.1, if neither the Proposed Action nor alternatives would have direct or indirect effects on a resource or resource use or program area, the EIS does not analyze potential cumulative effects related to that issue.

CEQA Requirements

Under CEQA, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts." An EIR must discuss cumulative impacts if the incremental effect of a project is "cumulatively considerable" (14 California Code of Regulations [CCR] Section 15130[a] et seq.). Such analysis requires a determination as to whether the combined impact of all projects considered together is cumulatively significant and, if it is, whether the incremental effect of the project [DRECP] evaluated under CEQA is cumulatively considerable (14 CCR Section 15064[h])[1]).

If the combined cumulative impact is not significant, the EIR must briefly explain why the impact is not significant and is not discussed in detail (14 CCR Section 15130[a][2]).

A project's contribution to a significant cumulative impact is cumulatively considerable if its incremental effects "are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (14 CCR Section 15065[a][3]). Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time (14 CCR Section 15355[b]).

Both the severity of impacts and the likelihood of their occurrence are to be indicated in the discussion of cumulative impacts, "but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact" (14 CCR Section 15130[b]).

An adequate discussion of significant cumulative impacts must include either a list of past, present, and probable future projects producing related or cumulative effects or a summary of projections from an adopted local, regional, or statewide plan, related planning document, or related environmental document that describes conditions contributing to the cumulative effect (14 CCR Section 15130[b]). The analysis must be sufficient in detail to be useful to the decision makers in deciding whether, or how, to adopt measures to mitigate cumulative impacts.

4.1.5.2 Methodology for Cumulative Impact Analysis

Under CEQA, a discussion of significant cumulative impacts must use one of two approaches or methodologies. One approach is to use a "list of past, present, and probable future projects producing related or cumulative impacts" (14 CCR Section 15130[b][1][A]). The other approach is to use a summary of projections contained in an adopted local, regional, or statewide plan, a related planning document, or a prior environmental document that has been adopted or certified, which

describes or evaluates regional or Plan Area conditions contributing to the cumulative impact (14 CCR Section 15130[b][1][B]).

This cumulative analysis uses the list approach but the County General Plan and the DRECP Final EIS and LUPA have been reviewed to consider projections from these approved plans.

With the exception of climate change, which is a global issue, the BLM has identified the California desert as the largest area within which cumulative effects should be assessed for all disciplines. However, within the desert region, the specific area of cumulative effect varies by resource. For each resource, the geographic scope of analysis is based on the topography surrounding the project site and the natural boundaries of the resource affected, rather than jurisdictional boundaries. The geographic scope of cumulative effects often extends beyond the scope of the direct effects, but not beyond the scope of the direct and indirect effects of the Proposed Action and alternatives.

The cumulative project tables presented in the PSPP FEIS (BLM, 2011) and RSA (CEC, 2010) and the PSEGS Draft SEIS (BLM, 2013) and FSA (CEC, 2013) have been updated and are presented in:

- Table 4.1-1, Existing Projects in the Project Area
- Table 4.1-2, Future Foreseeable Projects in the Project Area.

Each resource analysis considers these projects and lists the projects included in their cumulative geographic scope in their respective sections. Figure 4.1-1 (Cumulative Projects: Existing and Foreseeable; see Appendix A) presents the location and extent of each cumulative project listed on the two tables.

4.1.5.3 Cumulative Scenario

Desert Center Area Plan

As part of the Riverside County General Plan Update (2015), the County updated the Desert Center Area Plan. The Desert Center Land Use Plan reflects the limited development potential in this region. The majority of the area is designated Open Space-Rural, with some Agriculture, rural residential, and other low-density residential and commercial opportunities. The Area Plan notes that future development on the private land should focus on infill and contiguous expansion of the existing communities at Desert Center and Lake Tamarisk but is likely to be limited (Riverside County, 2015a). This information was taken into consideration by the authors when drafting the cumulative analysis as it indicates limited development on private land.

Renewable Energy Projects

A large number of renewable energy projects have been proposed on BLM-administered land, State land, and private land in California. As of July 2015, there were 76 renewable projects totaling approximately 5,800 MW in the California Desert District that were operational, under construction, or approved, and an additional 26 projects totaling 5,600 MW under environmental review (see the DRECP Section IV.25, Cumulative Impacts Analysis, for a list of these projects) (BLM, 2015).

Large renewable projects now described in applications to the BLM and on private land are competing for utility Power Purchase Agreements, which will allow utilities to meet State-required Renewable Portfolio Standards. Not all renewable projects will complete the environmental review process, and not all projects will be funded and constructed. It is unlikely that all of these projects will be constructed for the following reasons:

- Not all developers will develop the detailed information necessary to meet BLM standards. Preparing complete and detailed plans of development (POD) is difficult, and completing the required NEPA and CEQA documents is time-consuming and costly.
- As part of approval by the appropriate Lead Agency under NEPA and/or CEQA (generally the BLM and/or local jurisdiction), all regulatory permits must be obtained by the applicant or the prescriptions required by the regulatory authorities incorporated into the Lead Agency's license, permit or ROW grant. The large size of these projects may result in permitting challenges related to endangered species, mitigation measures or requirements, and other issues.
- Also after project approval, construction financing must be obtained (if it has not been obtained earlier in the process). The availability of financing will be dependent on the status of competing projects, the laws and regulations related to renewable project investment, and the time required for obtaining permits for individual projects.

It is noted that a portion of the renewable projects proposed in the desert may not get funded or built.

Other Cumulative Projects

In addition to renewable energy projects, there is some residential and commercial development planned and under construction along the I-10 corridor. The majority of these projects, listed in Tables 4.1-1 and 4.1-2, are located in Blythe. As noted above, little other development is anticipated in the Desert Center area.

One large project was previously proposed north of Desert Center but is no longer being considered. An up to 3,500-acre landfill, the Eagle Mountain Landfill Project at the Eagle Mountain mining site was included in the cumulative scenario for the PSPP project. The landfill proposal included a land exchange between Kaiser Mine and the BLM. The Sanitation Districts of Los Angeles County, who had planned to develop the landfill, announced they would not pursue acquisition of the project, ending the viability of the project in 2013. In December 2014, the U.S. District Court signed a final judgement and order on the Eagle Mountain Land Exchange in Riverside County that reversed the land exchange. This project is no longer included in the cumulative scenario (BLM, 2014); however, the Eagle Mountain Pumped Storage project is now proposed at that location (see Project C in Table 4.1-1).

Table 4.1-1. Existing Projects or Programs in the Project Area

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
1	West-wide Section 368 Energy Corridors	Riverside County, parallel to the I-10	BLM, DOE, U.S. Forest Service	Approved by BLM and U.S. Forest Service	N/A	Designation of corridors on federal land in the 11 western states, including California, for oil, gas, and hydrogen pipelines and electricity transmission and distribution facilities (energy corridors). One of the corridors runs along the southern portion of Riverside County.
2	Blythe PV Project	Blythe	NRG Energy	Operational	200	21 MW solar PV project located on 200 acres outside of Blythe.
3	McCoy Solar Project	Blythe	NextEra	Under construction	8,100	An up to 750 MW solar PV project located primarily on BLM administered land about 13 miles north of Blythe. The Project includes a 16-mile gen-tie line. The Project has almost completed construction of the first 250 MW of the project but does not have a schedule for the remaining 500 MW.
4	Genesis Solar Energy Project	North of I-10, 25 miles west of Blythe and 27 miles east of Desert Center	NextEra	Operational	1,950	250 MW solar trough project on 4,640 acres north of the Ford Dry Lake. Project includes six-mile natural gas pipeline and a 5.5-mile gen-tie line to the Blythe Energy Center to Julian Hinds Transmission Line, then travel east on shared transmission poles to the Colorado River Substation.
5	Blythe Solar Power Project	Blythe	NextEra	Under construction	4,100	A 485 MW solar PV project located 2 miles north of I-10 and 8 miles west of the City of Blythe on BLM land. A 230 kV gen-tie line will connect the solar energy generating facility to the SCE Colorado River Substation.
6	Desert Sunlight Solar Project	6 miles north of Desert Center	NextEra	Operational	4,400	A 550 MW solar PV project located on BLM land. The project includes a 230 kV transmission line that extends south from the Solar Farm site to interconnect with the Red Bluff Substation
7	SCE Red Bluff Substation	Southeast of Desert Center	SCE	Existing	75	220/500 kV substation to interconnect renewable projects near Desert Center to the DPV transmission line.

Table 4.1-1. Existing Projects or Programs in the Project Area

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
8	Devers–Palo Verde 1 Transmission Line	From Palo Verde, Arizona, to Devers Substation near Palm Springs	SCE	Existing	N/A	Existing 500 kV transmission line parallel to I-10 from Arizona to the SCE Devers Substation, near Palm Springs. DPV1 loops into the SCE Colorado River Substation which is located 10 miles southwest of Blythe.
9	Devers–Palo Verde 2 Transmission Line (Also called Devers-Colorado River Transmission Line)	From Blythe to Devers Substation near Palm Springs	SCE	Existing	N/A	Existing 500 kV transmission line parallel to the I-10 from the SCE Colorado River Substation to the Devers Substation. ROW requires 130 feet on federal, State, and private land.
10	Blythe Energy Project Transmission Line	From Blythe to Julian Hinds Substation	Blythe Energy, LLC	Existing	N/A	Existing 230 kV transmission line.
11	SCE Colorado River Substation	Blythe	SCE	Operational	90	A 500/230 kV substation located east of Blythe. The 500 kV switching station includes buses, circuit breakers, and disconnect switches. The switchyard is equipped with 108-foot-high dead-end structures. Outdoor night lighting is designed to illuminate the switchrack when manually switched on.
12	Desert Renewable Energy Conservation Plan+	California Desert District	BLM	Existing	10 million	The DRECP LUPA is an amendment to the CDCA for all BLM-administered public lands in the CDCA region. The plan will help provide effective protection and conservation of desert ecosystems while allowing for the appropriate development of solar, wind and geothermal energy projects. The DRECP designates 148,000 acres of Development Focus Areas in Riverside County.
*	Commercial and Residential projects	Blythe	Varies	Under construction	N/A	One commercial project (Hampton Inn & Suites) and two residential projects (Than Chanslor Place and Mesa Bluffs Villa) are under construction in Blythe California.

+ The data shown on Figure 4.1-1 for the Development Focus Areas, ACECs, and NLCS was taken from the DRECP Final EIS.
* Project location information is not available and not depicted on the map in Figure 4.1-1 but all projects would be located on private land in the Blythe area.
Source: DOE, 2016; BLM, 2016a; CEC, 2016a; City of Blythe, No Date. BLM, 2015.

Table 4.1-2. Future Foreseeable Projects in the Project Area

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
A	Desert Southwest Transmission Line	118 miles primarily parallel to the Devers–Palo Verde 500 kV line	Imperial Irrigation District	Final EIR/EIS prepared in 2005, approved by the BLM in 2006	N/A	Approximately 118-mile 500 kV transmission line from a new substation/switching station near the Blythe Energy Project to the existing Devers Substation located approximately 10 miles north of Palm Springs, California.
B	Sonoran Energy Project (licensed as Blythe Energy Project Phase II)	Blythe	AltaGas Sonoran Energy Inc.	Under environmental review (Final Staff Assessment published in August 2016)	30 acres	520 MW combined-cycle gas-fired power plant located entirely within the Blythe Energy Project site boundary. Project would interconnect with the proposed Keim Substation.
C	Eagle Mountain Pumped Storage Project	Eagle Mountain iron ore mine, north of Desert Center	Eagle Crest Energy Company	BLM is drafting an EA for the transmission and water supply line. FERC License issued June 2014; SWRCB approved project in July 2013	90	1,300 MW pumped storage project designed to store off-peak energy to use during peak hours. The captured off-peak energy would be used to pump water to an upper reservoir. When the water is released to a lower reservoir through an underground electrical generating facility the stored energy would be added into the Southwestern grid during "high demand peak" times, primarily weekdays.
D	Rice Solar Energy Project	Rice Valley, Eastern Riverside County	Rice Solar Energy, LLC (Solar Reserve, LLC)	Approved by Energy Commission, BLM, and WAPA	1,410	150 MW solar power tower project with liquid salt storage. Project is located on approximately 1,410 acres and includes a power tower approximately 650 feet tall and a 10-mile-long interconnection with the WAPA Parker-Blythe transmission line.
E	Desert Quartzite Solar	South of I-10, 8 miles southwest of Blythe	Desert Quartzite LLC (First Solar)	Under environmental review (NOI issued March 2015)	4,845	A 300 MW solar PV facility with a project substation, access road, and transmission line, all located on BLM land.
F	Crimson Solar	South of I-10, 8 miles southwest of Blythe	Sonoran West Solar Holdings, LLC (Recurrent Energy)	Plan of Development January 2016	4,000	An up to 450 MW solar PV project located on BLM land. The project would interconnect to the SCE Colorado River Substation.
G	Blythe Mesa Solar Project	East of Blythe	Renewable Resources Group	Approved by Riverside County in May 2015. Gen-tie approved by BLM in August 2015.	3,600	Up to 485 MW solar PV project located outside Blythe on private land. The gen-tie line would cross BLM land to reach the SCE Colorado River Substation.
H	Desert Harvest Solar Farm	North of Desert Center	EDF-RE	Approved by the BLM and Riverside County in 2013.	1,208	A 150 MW solar PV project located immediately south of the Desert Sunlight project. The gen-tie route would parallel the existing Desert Sunlight line to interconnect with the existing SCE Red Bluff Substation.

Table 4.1-2. Future Foreseeable Projects in the Project Area

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
I	DC 50 Solar Project	East of Desert Center	NRG Solar Desert Center, LLC	SF299 and POD submitted to BLM in November 2012	450	A solar PV project located on 450 acres of private agriculture land, adjacent to the Palen Solar Project. Gen-tie line would cross BLM land to reach the SCE Red Bluff Substation
J	SunEdison Jupiter Project (CACA 56477)	East of Desert Center	SunEdison Origination3, LLC	SF299 form submitted to BLM in October 2014	1,800	A solar PV project located on 1,800 acres of land administered by the BLM. Project would use sin access tracking and would interconnect with the SCE Red Bluff Substation.
K	First Solar Development, LLC (CACA 56782)	East of Desert Center	First Solar	SF299 form submitted to BLM in May 2016	3,500	A solar PV project located on 3,500 acres of land administered by the BLM with a gen-tie line inter-connection to the SCE Red Bluff Substation
L	SunPower Project	East of Desert Center	SunPower	SF299 form submitted to BLM in July 2016	2,000	An up to 400 MW solar PV project located on up to 2,000 acres of land administered by the BLM. Project would interconnect with the SCE Red Bluff Substation. Construction would take up to 24 months and would likely occur between 2019 and 2021.
M	Plot Plan No. 23577, Revised Permit No 2	Chuckwalla Valley Raceway	Chuckwalla Valley Associates, LLC	Approved, construction expected to begin shortly	10	The revised Plot Plan proposes a guest ranch consisting of new installation of forty (40) Park Model Recreational Vehicles (RV's) with approx-imately 80 overall parking stalls on a 10-acre portion of a 1,110-acre site at an existing private special use airport and private automotive racetrack facility. Additionally, the project will include an expanded water treatment system and on-site wastewater treatment system to serve the Park Model RV's
*	Commercial and residential projects	Blythe	Varied	Approved	N/A	One commercial project (Agate Senior Housing Development) and 10 residential projects (van Weelden [1184 SFR], Sonora South [43 SFR], Irvine Assets [108 SFR], Chanslor Village [79 SFR], St. Joseph's Investments [69 SFR], Edge-water Lane [45 SFR], The Chanslor Place Phases II & III [78 SFR], The Chanslor Place Phase IV [57 SFR], Mesa Bluffs Villas Phase IV [26 Attached SFR], and Palo Verde Oasis Phase IV [29 SFR].

Table 4.1-2. Future Foreseeable Projects in the Project Area

ID #	Project Name; Agency ID	Location	Ownership	Status	Acres	Project Description
**	(eligible) Renewable Energy Development Program	Riverside County	Riverside County	In process	N/A	In 2014, the County initiated the eRED Planning program with funding from the Energy Commission. The purpose of the program is to coordinate and encourage eligible renewable energy resource development at the General Plan level including a General Plan Amendment.
***	Paradise Valley Development – Specific Plan No. 339	Approximately 30 miles west of Desert Center (8 miles east of the city of Coachella)	GLC Enterprises, LLC	Under environmental review – Notice of Preparation of a Draft EIR published in October 2015.	5,000 (development footprint is 1,800 acres)	Project is a Specific Plan that would define and provide development standards and implementation measures for the planning community, or new town, of Paradise Valley. The project would develop approximately 1,800 acres of an approximately 5,000-acre site providing for 8,500 residential units, about 1.38 million square feet of non-residential land uses (commercial office, retail, hotels, light industrial and public facilities) and 110 acres of recreational trails and parks.

* Project location information is not available and not depicted on the map in Figure 4.1-1 but all projects would be located on private land in the Blythe area.
** Project does not include specific locations at this time.
*** Project would be west of the region shown on Figure 4.1-1.

Source: BLM, 2016a; BLM, 2016b; City of Blythe, No Date; CEC, 2016b; Recurrent Energy, 2016; NRG, 2012; SunEdison, 2014; First Solar, 2016; SunPower, 2016; Riverside County, 2016; Riverside County, 2015b

4.2 Air Resources

4.2.1 Impact Assessment Methodology

Potential effects on air resources from the Proposed Action and alternatives may occur as a result of emissions of criteria air pollutants during construction activities, operations and maintenance, and decommissioning, including restoration of the area. The assessment quantifies criteria air pollutant emission rates based on the description of construction and operational activities provided by the Applicant. Based on the estimated emissions, guidance from the South Coast Air Quality Management District (SCAQMD) indicates whether the emissions may cause a significant impact to air resources. The potential impact of emissions on air resources is compared with the regional emissions significance thresholds recommended by SCAQMD. Emissions and impacts during the closure, decommissioning, and restoration phase of the facilities and for the alternatives are analyzed qualitatively.

The U.S. EPA provided a comment letter (dated August 31, 2016) requesting that this Supplemental EIS/EIR include the following:

- A detailed discussion of existing conditions (Supplemental EIS/EIR Section 3.2).
- Quantification estimated emissions of criteria pollutants from the Proposed Action and discuss the timeframe for release of these emissions over the lifespan of the Project (Supplemental EIS/EIR Section 4.2.2).
- Specification of the emission sources by pollutant from mobile sources, stationary sources, and ground disturbance (Supplemental EIS/EIR Section 4.2.2).
- Recommendations on the construction emissions mitigation plan (Supplemental EIS/EIR Section 4.2.4).

As noted in this Supplemental EIS/EIR, Section 3.2, there are no federal nonattainment or maintenance designations in the Mojave Desert Air Basin (MDAB) portion of Riverside County. Federal agency actions in the MDAB portion of Riverside County are not subject to federal general conformity review requirements. Section 3.2 and the previous analyses of impacts on air quality summarize the potential health effects of the air pollutants in this analysis.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.2.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.2.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. None of the APMs are relevant to air resources.

4.2.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The project site is within the MDAB and within the jurisdiction of the South Coast Air Quality Management District (SCAQMD), which generally includes the urban and coastal areas of the counties of Riverside, San Bernardino, Orange, and Los Angeles. The Riverside County portion of the MDAB attains all ambient air quality standards, except this portion of the basin is designated as nonattainment at the state level for the California AAQS for ozone and particulate matter under 10 micrometers in diameter (PM10).

The Proposed Action includes the construction and operation of a 500 megawatt (MW) solar generating facility and supporting components to produce approximately 1,599,000 megawatt-hours per year (MWh/year) of renewable energy. The solar panel field and area of total disturbance for the project site would be 4,200 acres. Air emissions would occur during 30 months of construction that may be phased between 2018 and 2020. After construction, operation of the Proposed Action power plant would not require use of fossil fuels to produce electricity and the Project would not involve any major stationary sources of air emissions. However, certain operations and maintenance activities would create air emissions from vehicles and other mobile sources.

Proposed Action: Direct Effects

Construction Activities. Construction of the Proposed Action would involve use of a wide range of construction vehicles and equipment, and the dust created by the ground disturbance, material handling, and vehicle movement. Equipment and vehicular exhaust emissions include the following air pollutants: nitrogen oxides (NOx), volatile organic compounds (VOCs), PM10, particulate matter under 2.5 micrometers in diameter (PM2.5), carbon monoxide (CO), and sulfur oxides (SOx). The sources of exhaust emissions generated during construction activities include diesel-powered off-road construction equipment and on-road vehicles.

Fugitive dust emissions would occur primarily related to ground disturbance activities. Specifically, any form of soil or surface disturbance may cause particulate matter (PM10 and PM2.5) to become entrained with the ambient air. Earth moving activities from vegetation clearing to grading and access road construction and revegetation result in generation of fugitive dust due to wind erosion. Additionally, material loading or handling and vehicle travel on paved or unpaved surfaces create fugitive dust as particle matter may be cast aloft. Dust would occur as a result of installation and use of a portable and temporary on-site concrete batch plant, if needed, and by wind erosion of areas disturbed during construction activities.

Along with emissions due to fuel combustion and equipment exhaust, and fugitive dust emissions, installation of project features may also include a relatively small amount of use of building materials that normally emit volatile organic compounds (e.g., paints, solvents, and lubricants). Onsite gasoline or diesel fuel dispensing are not included with the proposed construction facilities.

Emissions are estimated based on the following assumptions:

- The anticipated 30-month construction schedule and equipment fleet, and operating equipment and activities, described in Section 2.2, Proposed Action.
- Fugitive dust subject to compliance with local air district rules regarding dust control (including SCAQMD Rule 403.

- Construction water supplies would arrive by truck from the Lake Tamarisk Country Club, and the average round trip would be 26 miles.
- Construction workers could commute from housing centers in the Mojave Desert Air Basin, such as Blythe, or from outside the project study area and air basin, such as the Coachella Valley or Palm Springs. Average round trip miles traveled for workers and heavy duty haul vehicles for deliveries is 331 miles. Emissions for travel over greater distances would be outside the project study area and outside the air basin.

Emissions from the construction and operation of the project components are estimated using California Emissions Estimator Model (CalEEMod v. 2013.2.2). Although the project emissions are modeled based on the anticipated construction schedule, workforce, equipment, and types of vehicle trips, as described in Section 2.2, Proposed Action, details about the construction activities and phasing may change as the Project evolves into a final design. (Emissions estimator model output report is provided in Appendix E.)

Construction emissions presented in this assessment represent the daily average quantities considering that most activities would overlap at some point within the anticipated schedule of 30 months. The anticipated duration of construction would span from 4th quarter of 2017 through the 2nd quarter of 2020 (30 months), with commercial operation possibly being phased between 2018 and 2020.

Table 4.2-1 and Table 4.2-2 summarize the estimated average daily and overall annual rates of construction-phase emissions, respectively, incorporating mitigation that specifies use of Tier 3 equipment and use of soil stabilizers or watering exposed areas (3 times/day) to control dust.

Table 4.2-1. Average Daily Construction-Phase Emissions, Proposed Action (average lb/day)

Anticipated Year	NOx	VOC	PM10	PM2.5	CO	SOx
2017	85.9	6.8	57.4	16.9	181.9	0.3
2018	660.9	43.4	277.7	73.2	1,102.9	2.3
2019	482.3	32.5	244.5	63.1	861.2	1.9
2020	104.1	7.4	99.4	19.5	208.9	0.5
Proposed Action, Overall Average Rate over 30-months	**533.2**	**36.0**	**271.6**	**69.1**	**941.9**	**2.0**
Thresholds Recommended by SCAQMD	100	75	150	55	550	150

Source: CalEEMod 2013.2.2. Construction average daily emissions are based on 22 working days per month. (See Appendix E)

Table 4.2-2. Construction-Phase Emissions, Proposed Action by Year

Anticipated Year	NOx	VOC	PM10	PM2.5	CO	SOx
2017 (ton/year)	11.33	0.90	7.57	2.23	24.01	0.05
2018 (ton/year)	87.24	5.73	36.65	9.66	145.58	0.30
2019 (ton/year)	63.66	4.28	32.28	8.33	113.68	0.25
2020 (ton/year)	13.74	0.98	13.11	2.58	27.57	0.07
Proposed Action, Total Overall Construction (tons)	**175.97**	**11.89**	**89.62**	**22.79**	**310.84**	**0.67**

Source: CalEEMod 2013.2.2. (See Appendix E)

The MDAB is designated as nonattainment at the state level for the California AAQS for ozone and PM10. As such, emissions of ozone precursors NOx (including NO_2) and VOC from construction and emissions of PM10 have the potential to contribute to existing nonattainment conditions in the area. The emission estimates indicate that construction activities under the Proposed Action could cause adverse effects by contributing to exceedances of the ozone and PM10 standards.

When compared with the solar trough technology that was analyzed in the PSPP PA/FEIS, the Proposed Action would involve a shorter construction schedule, and lower rates of construction-phase emissions.

Operation and Maintenance Activities. Operations and maintenance would involve use of vehicles and other mobile sources of emissions, including off-road equipment within the site and offsite including: delivery vehicles, employee vehicles, pickup trucks, a panel-washing vehicle, and vehicles for security personnel. No stationary sources of air emissions would be needed, such as an emergency fire water pump engine or emergency power generators. The septic system for on site wastewater would be permitted by the Riverside County Health Department and exempt from air permitting requirements. Power from existing local distribution lines would provide backup power to key project facilities, and electricity would power the water pumping and wastewater treating systems O&M use. Fugitive dust emissions during operation would be generated mostly from vehicle trips for employee commutes, security, and maintenance activities.

The operation and maintenance emissions are estimated and shown in Table 4.2-3 based on the average daily routine activities. These activities include worker trips and O&M activities of a workforce of 12 personnel, plus security and outside contractors, as needed, and vegetation treatment.

Table 4.2-3. Average Daily Operation and Maintenance Emissions, Proposed Action (lb/day)

Category of Sources	NOx	VOC	PM10	PM2.5	CO	SOx
Area-wide (coatings, vegetation management)	0.1	3.9	0.0	0.0	9.3	0.0
Mobile Sources	15.6	2.6	115.4	13.5	53.7	0.2
Proposed Action O&M Total	**15.7**	**6.4**	**115.4**	**13.6**	**63.0**	**0.2**
Thresholds Recommended by SCAQMD	55	55	150	55	550	150

Source: CalEEMod 2013.2.2. Operation & Maintenance average daily emissions are based 365 days per year. (See Appendix E)

Operation of the project facilities would contribute to existing exceedances of the ozone and PM10 California AAQS, although the quantities of emissions would be substantially lower than those during construction and so would not adversely affect local or regional air quality. Similar to construction, fugitive dust emissions during operation would occur primarily during daytime hours. Airborne dust generated from the project site would be widely and intermittently dispersed across the site. Due to the limited operation emission sources, operation dust emissions would be minimal and would be reduced further by implementing mitigation.

When compared with the solar trough technology that was analyzed in the PSPP PA/FEIS, the Proposed Action would include no new stationary sources, and no use of a heat transfer fluid or steam turbine. The Proposed Action would cause lower levels of operation-phase emissions.

Closure, Decommissioning and Restoration. The anticipated operational lifespan of the proposed solar facility is estimated to be at least 30 years. The Decommissioning Plan and closure

may require complete removal of equipment and restoration of the land to BLM-approved specifications. Above-ground structures would be removed, and the site would be returned to original conditions. The scope of activities, the range of equipment involved, and emissions associated with the closure, decommissioning, and restoration would be similar to those for project construction.

When compared with the solar trough technology that was analyzed in the PSPP PA/FEIS, the Proposed Action would involve lower levels of decommissioning activities and emissions as fewer components would need to be removed.

Visibility. Joshua Tree National Park (JTNP) is a mandatory Class I area that is given visibility protection through the federal CAA. The Proposed Action would involve the disturbance of desert soil and creation of fugitive dust that could cause be visible from within Joshua Tree National Park. The nearest boundary of the JTNP Class I area would be approximately 7 miles north of the project boundary. Airborne dust generated at the project site could be visible during construction from within the park, especially because low humidity provides clear vistas and relatively low haze. Construction activities would not require use of any major stationary sources that could permanently affect regional air quality or visibility at the Class I area, and the sources of emissions during construction would occur near the ground level where dust would have a limited ability to notably affect distant vistas. Precursors to haze would also be intermittently released near ground level by construction equipment exhaust. Because of the diffuse and intermittent nature of construction sources, the emissions would be widely dispersed across the project site, and concentrations near the JTNP would be greatly reduced and much lower than the localized effects near the project site.

Construction emissions would occur primarily during daytime hours and would be controlled to avoid visible plumes as required by SCAQMD Rule 403. Dust and equipment exhaust emissions would be minimized through compliance with local rules and regulations established to control PM10 and to avoid visible plumes (as in SCAQMD Rule 403). Airborne dust generated by wind erosion would be greatly reduced in concentrations during the nighttime hours when construction activity ceases for the day. With these emissions controls requirements for PM10 and the precursors to formation of secondary particulate (see DSEIS Section 3.2), an existing trend of generally improving visibility would not be disrupted, and the Proposed Action would not create adverse project-related visibility impacts to vistas or in night sky visibility in the JTNP Class I area.

Proposed Action: Indirect Effects

Electricity would be produced by the solar facility in the Proposed Action. The energy delivered to the grid would displace the need for other resources or power plants to generate electricity, which partially avoids the need for other power plants to operate. However, the exact nature and location of any changes in power plant dispatch and the subsequent changes in criteria air pollutant emissions is not within the control of the Applicant, and would not be likely to occur in the area of project impacts.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would have a reduced development footprint (3,100 acres) when compared with that of the Proposed Action, with the solar fields being configured to fit

within two separate portions of the site, to avoid use of the central desert wash and retain vegetation on the site. Construction, operations and maintenance, and decommissioning activities would be the same as with the Proposed Action, with the same activity to develop a 500 MW being reconfigured to occur within a smaller area. Therefore, air pollutant emissions due to development activities and ambient air quality impacts would be the same as with the Proposed Action.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would have a much smaller development footprint (1,620 acres) than that of the Proposed Action, and this would allow preservation of natural areas and habitat on the site that would otherwise be developed as part of the Proposed Action. Construction, operations and maintenance, and decommissioning activities would be the same as with the Proposed Action, with proportionately less activity related to the smaller development footprint. Air pollutant emissions due to development activities and ambient air quality impacts would be reduced overall and would occur at roughly half of the rates otherwise presented for the Proposed Action.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. No new sources of air pollutants would occur, and no production of electricity from solar energy would occur at this application site unless a future project occurs at this location.

4.2.3 Cumulative Effects

Geographic Scope

The geographic scope for cumulative impacts to air resources includes the Mojave Desert Air Basin where emissions from the Proposed Action and alternatives would occur. The geographic scope and elements to consider for air resources effects are all projects shown in Tables 4.1-1 and 4.1-2, discussed below.

Cumulative Impact Analysis

Concurrent construction of other projects in close proximity to the proposed project site could result in increased local air quality impacts for the limited duration of simultaneous construction activities. Development of renewable energy projects and other cumulative projects would result in an increase in construction dust and exhaust emissions from construction equipment and vehicles. This concurrent construction could increase emissions to a level that may violate or contribute to an existing violation of air quality standards within the Mojave Desert Air Basin, which would be a cumulative air quality impact during the limited or short-term phases of construction overlapping with construction of the proposed solar facility. The sources of construction dust and types of motor vehicle or off-road equipment sources would be similar at all development sites, as all sites would require mobilizing construction equipment and crews and creating permanent ground disturbances for various development activities.

Construction-phase emissions from each specific project site would vary depending on the specific activities occurring and over time, but the cumulative emissions would occur within an air basin

that is a state nonattainment area for ozone and PM10. The emission quantities in any given year depend on project-specific timelines that are uncertain and continue to be refined as each project independently proceeds through development. Cumulative emissions are not reliably predictable given the variable nature of construction activities and the potential for project plans to be modified or experience delays.

In particular, EDF's 150 MW Desert Harvest Project (located about 8 miles northwest of the PSP) may be under construction at the same time as the Palen Solar Project, due to the potential for them to be linked through a single power purchase agreement. The air quality effects of these two projects include potential dust and vehicle emissions. The effects of the cumulative projects would combine with the construction emissions from the Proposed Action to result in a cumulative impact caused by short-term air emissions and contributing to violations of the state ambient air quality standards for ozone and PM10. The Proposed Action's construction-related criteria air pollutant emissions would cease with completion of the 30-month duration, and after that time they would not contribute to long-term nonattainment conditions. Additionally, all nearby construction, even if unrelated to the Proposed Action, would need to comply with the local air district (SCAQMD or Mojave Desert Air Quality Management District) rules and regulations regarding dust control and nuisances, and additional mitigation may be applied to the cumulative projects through environmental permitting by lead agencies. Because no cumulative project sites would be likely to create a permanent source of concurrent construction emissions, no cumulative effects would be likely from construction.

Cumulative renewable energy projects and other development would require operations and maintenance activities over the long-term life of each project. Routine upkeep of the site, security patrols, employee commuting trips, and vegetation removal cause dust emissions from vehicles or equipment that travel on unpaved surfaces. These activities also increase the use of portable equipment and motor vehicles that emit criteria air pollutants as products of fuel combustion. Certain cumulative projects could include installation and use of new stationary or portable sources. Because these activities would occur within an air basin that is a state nonattainment area, the emissions from the operations and maintenance activities would exacerbate the nonattainment conditions. The emissions from these sources and the other O&M activities would combine with the operational-phase emissions from the Proposed Action to result in a cumulative impact by contributing to existing violations of the state ambient air quality standards for ozone and PM10.

Depending on each specific development site, new emissions sources occurring with the cumulative projects could also result in a cumulative impact by being close to sensitive receptors, which could result in exposure to adverse air pollutant concentrations. Construction activities within the nearest 500 meters (1,641 feet) of a receptor would have the greatest potential to cause locally adverse concentrations (SCAQMD, 2009); adverse effects would be unlikely to overlap because no foreseeable projects would be within the nearest 500 meters of the Proposed Action ROW Boundary (Figure 4.1-1). All cumulative projects and the Proposed Action would need to comply with the local air district rules and regulations. This means that each project would implement controls for new stationary sources and the control strategies of each applicable air quality management plan, and additional mitigation may be applied through environmental permitting by lead agencies. The quantities of operational-phase emissions from the Proposed Action would be small and unlikely to be cumulatively considerable in comparison with cumulative projects, some of which involve large new stationary sources.

4.2.4 Mitigation Measures

All alternatives except for No Action Alternative would result in adverse impacts to air resources, primarily during the construction phase; thus, incremental impacts to air resources cannot be entirely avoided. However, the magnitude of the project-specific impact has been limited as much as possible with the Proposed Action as it would not include any new stationary sources of air pollutants. Additionally, implementing the Proposed Action or an action alternative in conjunction with the relevant mitigation measures presented below would control air pollutant emissions from construction activities and during operations. These mitigation measures were originally presented for the PSPP project and have been reviewed and revised to ensure they include current information and are appropriate for the amended technology.

AQ-SC-1 **Air Quality Construction Mitigation Manager (AQCMM).** The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with Conditions of Certification AQ SC3, AQ SC4 and AQ SC5 for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities, and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the BLM APO.

AQ-SC-2 **Air Quality Construction Mitigation Plan (AQCMP).** The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with Conditions of Certification AQ SC3, AQ SC4, and AQ SC5.

AQ-SC-3 **Construction Fugitive Dust Control.** The AQCMM shall submit documentation to the BLM's Authorized Officer in each Monthly Compliance Report that demonstrates compliance with the Air Quality Construction Mitigation Plan (AQCMP) mitigation measures for the purposes of minimizing fugitive dust emission creation from construction activities and preventing all fugitive dust plumes from leaving the Project. Any deviation from the AQCMP mitigation measures shall require prior BLM Authorized Officer notification and approval.

a. The main access roads through the facility to the power block areas will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the main power block area, and delivery areas for operations materials (chemicals, replacement parts, etc.) will be paved or treated prior to taking initial deliveries.

b. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient

or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts, including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the Project and linear construction sites shall be watered as frequently as necessary during grading (consistent with Biology Conditions of Certification that address the minimization of standing water); and after active construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods, in order to comply with the dust mitigation objectives of Condition of Certification AQ-SC4. The frequency of watering can be reduced or eliminated during periods of precipitation.

c. No vehicle shall exceed 10 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

d. Visible speed limit signs shall be posted at the construction site entrances.

e. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

f. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

g. All unpaved exits from the construction site shall be graveled or treated to prevent trackout to public roadways.

h. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the AO.

i. Construction areas adjacent to any paved roadway below the grade of the surrounding construction area or otherwise directly impacted by sediment from site drainage shall be provided with sandbags or other equivalently effective measures to prevent runoff to roadways, or other similar runoff control measures as specified in the Storm Water Pollution Prevention Plan (SWPPP), only when such SWPPP measures are necessary so that this Condition does not conflict with the requirements of the SWPPP.

j. All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

k. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.

l. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds.

m. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard.

n. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this Condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

AQ-SC-4 **Dust Plume Response Requirement.** The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (A) off the project site and within 400 feet upwind of any regularly occupied structures not owned by the project owner or (B) 200 feet beyond the centerline of the construction of linear facilities indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMP shall include a section detailing how the additional mitigation measures will be accomplished within the time limits specified. The AQCMM or Delegate shall implement the following procedures for additional mitigation measures in the event that such visible dust plumes are observed:

Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2, specified above, fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The owner/operator may appeal to the BLM Authorized Officer any directive from the AQCMM or Delegate to shut down an activity, if the shutdown shall go into effect within one hour of the original determination, unless overruled by the BLM Authorized Officer before that time.

AQ-SC-5 **Diesel-Fueled Engine Control.** The AQCMM shall submit to the CPMBLM AO, in the Monthly Compliance Report, a construction mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the AQCMP mitigation measures shall require prior and CPMBLM AO notification and approval.

a. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the Conditions set forth herein.

b. All construction diesel engines with a rating of 50 hp or higher shall meet, at a minimum, the Tier 3 California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the BLM AO that is certified by the on-site AQCMM demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 3 engine is not available for any off-road equipment larger than 100 hp, that equipment shall be equipped with a Tier 2 engine, or an engine that is equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 2 levels unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this Condition, the use of such devices is "not practical" for the following, as well as other, reasons.

    1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question to Tier 2 equivalent emission levels and the highest level of available control using retrofit or Tier 1 engines is being used for the engine in question; or

    2. The construction equipment is intended to be on site for 10 days or less.

    3. The BLM AO may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical.

c. The use of a retrofit control device may be terminated immediately, provided that the BLM AO is informed within 10 working days of the termination and that a replacement for the equipment item in question meeting the controls required in item "b" occurs within 10 days of termination of the use, if the equipment would be needed to continue working at this site for more than 15 days after the use of the retrofit control device is terminated, if one of the following Conditions exists:

    1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.

    2. The retrofit control device is causing or is reasonably expected to cause engine damage.

    3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.

    4. Any other seriously detrimental cause which has the approval of the BLM AO prior to implementation of the termination.

d. All related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

e. All diesel heavy construction equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.

f. Construction equipment will employ electric motors when feasible.

AQ-SC-6 **Emission Standards Vehicles.** The project owner, when obtaining dedicated on-road or off-road vehicles for panel washing activities and other facility maintenance activities, shall obtain only new model year vehicles that meet California on-road vehicle emission standards or appropriate U.S.EPA/California off-road engine emission standards for the model year when obtained.

AQ-SC-7 **Operation Dust Control Plan.** The project owner shall provide a site Operations Dust Control Plan, including all applicable fugitive dust control measures identified in the verification of AQ-SC-3 that would be applicable to minimizing fugitive dust emission creation from operation and maintenance activities and preventing all fugitive dust plumes from leaving the project site that:

A. describes the active operations and wind erosion control techniques such as windbreaks and chemical dust suppressants, including their ongoing maintenance procedures, that shall be used on areas that could be disturbed by vehicles or wind anywhere within the project boundaries; and

B. identifies the location of signs throughout the facility that will limit traveling on unpaved portion of roadways to solar equipment maintenance vehicles only. In addition, vehicle speed shall be limited to no more than 10 miles per hour on these unpaved roadways, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

The site operations fugitive dust control plan shall include the use of durable non-toxic soil stabilizers on all regularly used unpaved roads and disturbed off-road areas, or alternative methods for stabilizing disturbed off-road areas, within the project boundaries, and shall include the inspection and maintenance procedures that will be undertaken to ensure that the unpaved roads remain stabilized. The soil stabilizer used shall be a non-toxic soil stabilizer or soil weighting agent that can be determined to be as efficient as or more efficient for fugitive dust control than ARB approved soil stabilizers, and that shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control.

The performance and application of the fugitive dust controls shall also be measured against and meet the performance requirements of condition AQ-SC4. The measures and performance requirements of AQ-SC4 shall also be included in the operations dust control plan.

AQ-SC-8 **BLM AO Copies of Documents.** The project owner shall provide the BLM AO copies of all District issued Authority-to-Construct (ATC) and Permit-to-Operate (PTO) documents for the facility. The project owner shall submit to the BLM AO for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the BLM AO any modification to any permit proposed by the District or U.S. Environmental Protection Agency (U.S. EPA), and any revised permit issued by the District or U.S. EPA, for the Project.

4.2.5 Residual Effects after Implementation of Mitigation Measures

Residual impacts on air resources would exist even with implementation of relevant mitigation measures. Construction and operation of the Proposed Action or alternatives would result in emissions of PM10 and NOx and VOC that would contribute to existing exceedances of the California AAQS for ozone and PM10.

4.2.6 Unavoidable Adverse Impacts

Construction and operation of the Proposed Action or alternatives would result in unavoidable adverse impacts on air resources through emissions of PM10 and NOx and VOC that would contribute to existing exceedances of the California AAQS for ozone and PM10.

4.2.7 CEQA Significance Thresholds and Determinations

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the Proposed Action and alternatives would have significant impacts on air quality if they would:

AQ-1 Conflict with or obstruct implementation of the applicable air quality plan; or

AQ-2 Violate any air quality standard or contribute substantially to an existing or projected air quality violation; or

AQ-3 Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors); or

AQ-4 Expose sensitive receptors to substantial pollutant concentrations; or

AQ-5 Create objectionable odors affecting a substantial number of people.

To characterize the potential impact of emissions on air resources, SCAQMD recommends use of regional emissions significance thresholds for construction activities and for project-related operation emissions that are subject to CEQA review. The emissions from the activities of construction and operation under the Proposed Action and each alternative are compared to these SCAQMD regional significance thresholds to determine whether the Proposed Action and alternatives would result in unavoidable adverse air quality impacts. The SCAQMD regional emissions significance thresholds are summarized in Table 4.2-4.

Table 4.2-4. SCAQMD Regional Significance Thresholds (lb/day)

Pollutant	Construction	Operation
Nitrogen Oxides (NOx)	100	55
Volatile Organic Compounds (VOC)	75	55
Inhalable Particulate Matter (PM10)	150	150
Fine Particulate Matter (PM2.5)	55	55
Carbon Monoxide (CO)	550	550
Sulfur Oxides (SOx)	150	150

Source: SCAQMD 2015.

SCAQMD developed the Localized Significance Thresholds (LSTs) as a way to determine if a project could locally exceed the ambient air quality standards or cause a substantial contribution to existing exceedances at a given distance from an emitting site boundary to a nearby receptor. The LSTs vary depending on the Source Receptor Area of the Project within the SCAQMD jurisdiction. LSTs for the Desert Center area (East Riverside County) are presented in Table 4.2-5.

Table 4.2-5. SCAQMD Localized Significance Emissions Thresholds

Pollutant	Site Area	Construction (lb/day)			Operation (lb/day)		
		25 meters	100 meters	500 meters	25 meters	100 meters	500 meters
Nitrogen Oxides (NOx)	5 acres	304	425	875	304	425	875
PM10	5 acres	14	67	248	4	16	60
PM2.5	5 acres	8	19	128	2	5	31
Carbon Monoxide (CO)	5 acres	2,292	5,331	31,115	2,292	5,331	31,115

Note: East Riverside County is SCAQMD "Source Receptor Area" zone 31.
Source: SCAQMD 2009.

AQ-1 Conflict with Applicable Air Quality Plan

This criterion assesses whether the Proposed Action or an alternative would conflict with or obstruct implementation of the applicable air quality plan. Each local air district is responsible for managing local air quality and administering other California and federal programs ensuring implementation of the air quality management plan. While the proposed solar facility would be located in the eastern Riverside County portion of the Mojave Desert Air Basin, which attains all federal criteria air pollutant standards, the rules and regulations of the SCAQMD would apply to all project activities. These local rules and regulations reflect the emission control measures to implement the air quality management plans adopted by the SCAQMD, and these emission control measures would be fully implemented by the Project. The proposed solar facility would not create any notable changes in permanent employment or housing that could conflict with the underlying growth assumptions of the air quality management plans adopted by the SCAQMD. As such, compliance with the applicable rules and regulations ensures that the Proposed Action would not conflict with or obstruct implementation of the applicable air quality plan. This impact would be less than significant, and no mitigation is required.

AQ-2 Violate Air Quality Standards

This criterion assesses whether the Proposed Action or an alternative would violate any air quality standard or contribute substantially to an existing or projected air quality violation. The Proposed Action would contribute air pollutant emissions to the region during construction activities and project operation. Of the action alternatives, air pollutant emissions and ambient air quality impacts would be notably reduced by only the Avoidance Alternative (Alternative 2). These emissions and potential ambient air quality impacts are discussed separately in more detail below.

Construction-Phase Impacts. Emissions during the construction phase would include criteria air pollutants that could contribute to existing or projected violations of the ambient air quality standards. During construction, emissions would be generated at the site of the proposed solar facility and along the highways and roadways used to access the site. Construction emissions would be caused by exhaust from vehicles and equipment (this includes ozone precursors [volatile organic compounds (VOC) and NOx], CO, and particulate matter [PM10 and PM2.5]) and fugitive dust/particulate matter from ground-disturbing activities and travel on unpaved surfaces. All construction activity would be required to comply with local air district rules regarding dust control (including Rule 403). Diesel and gasoline-powered construction equipment would be classified as portable or non-highway sources (off-road equipment). On-road motor vehicles used during construction would include the heavy-duty trucks to deliver equipment, concrete, water, and other materials, and vehicles carrying crews and medium-duty deliveries.

The construction emissions of NOx, PM10, PM2.5, and CO for the Proposed Action and Alternative 1 would exceed the relevant regional emissions thresholds of significance from the SCAQMD. Based on the LSTs for the Desert Center area (East Riverside County), the Proposed Action could violate the air quality standards or contribute substantially to existing air quality violations for ozone, PM10, and PM2.5 for locations near the site during construction or within 500 meters (1,641 feet). With construction emissions exceeding the relevant regional significance thresholds for NOx, PM10, PM2.5, and CO for the Proposed Action, the impact to ambient air quality would be significant during construction.

Implementing the Avoidance Alternative (Alternative 2) would notably reduce overall development activities, which would result in proportionately less emissions and lower levels of air quality impacts when compared with the Proposed Action. Depending on the development plan for the Avoidance Alternative (Alternative 2), construction emissions of some pollutants (PM10, PM2.5, and CO) may be reduced to levels that do not exceed the regional significance thresholds, but this depends on whether the typical or average daily level of activity would be less than with the Proposed Action. Although overall activities would be reduced, the impact to ambient air quality caused by NOx during construction of the Avoidance Alternative (Alternative 2) would remain significant.

Mitigation applicable to the Proposed Action and the action alternatives would minimize and avoid certain impacts from dust emissions and off-road equipment exhaust. No additional mitigation would be feasible.

Table 4.2-1 summarizes the estimated average daily rates of construction-phase emissions including mitigation that specifies use of Tier 3 equipment and use of soil stabilizers or watering exposed areas (3 times/day) to control dust. Because these levels of construction emissions would

exceed the relevant regional significance thresholds for NOx, PM10, PM2.5, and CO, Impact AQ-2 after mitigation would remain significant and unavoidable.

Operational-Phase Impacts. Operation, maintenance, inspections, and panel washing would cause minimal levels of air pollutant emissions. Operation of the solar facility would need to comply with general air district provisions to implement controls such as the use of water or chemical dust suppressants to minimize particulate matter emissions and to prevent visible particulate emissions to avoid nuisances. With minimal direct emissions during operation, the Proposed Action would not violate any air quality standard or contribute substantially to an existing air quality violation. The impact of emissions from project operations would be less than significant, and no mitigation is required.

AQ-3 Result in Considerable Net Increase of Criteria Pollutant

This criterion assesses whether the Proposed Action or an alternative would result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). Concurrent construction of other projects in close proximity to the proposed project site could result in increased local air quality impacts for the limited duration of simultaneous construction activities; however, all nearby construction, even if unrelated to the Proposed Action or an alternative, would need to comply with local air district rules regarding dust control and nuisances. Because construction-related criteria air pollutant emissions would cease with completion of the 30-month duration, they would not contribute to long-term nonattainment conditions. These emissions would not be at a cumulatively considerable level.

Small quantities of operational emissions would result from limited vehicle use related to periodic maintenance and security activities, and these emissions would be minor and well below the applicable thresholds. As such operation of the proposed solar facility would not result in a cumulatively considerable net increase of any criteria pollutant. The impact due to the net increase of nonattainment criteria air pollutants, including ozone precursors and particulate matter, would be less than significant, and no mitigation is required.

AQ-4 Expose Sensitive Receptors to Pollutant Concentrations

This criterion assesses whether the Proposed Action or an alternative would expose sensitive receptors to substantial pollutant concentrations. Sensitive receptors include one dwelling that would be as close as 25 feet from the edge of the proposed project site, and another residence approximately 3,500 feet northwest of the project site boundary. The Eagle Mountain School is over 16 miles to the northwest of the project site.

Construction activities would result in locally increased concentrations of construction-related emissions, including diesel particulate matter (DPM) and other toxic air contaminants, which would cause increased health risk and hazards near the site. While facility-wide construction emissions are not directly comparable with the LSTs, which are applicable to smaller (up to 5 acres) sites, the Proposed Action could locally violate the air quality standards or contribute substantially to existing air quality violations for ozone, PM10, and PM2.5 within 500 meters (1,641 feet) of the activity. The construction-related emissions would cease with completion of

the 30-month duration, and sources of construction emissions would be dispersed around the site, ensuring that no single location would be exposed to persistent and substantially increased pollutant concentrations. Similarly, during project operations and maintenance, emissions would be from limited use of on-highway motor vehicles for routine maintenance, repair, and inspection that would not expose sensitive receptors to substantial concentrations of air pollutants. No new stationary sources of emission would be included with the Proposed Action. Mitigation would minimize and avoid certain impacts from dust emissions and off-road equipment exhaust so that emissions would not expose any sensitive receptors to substantial concentrations. This impact would be less than significant, and no additional mitigation is required.

AQ-5 Create Objectionable Odors

This criterion assesses whether the Proposed Action or an alternative would create objectionable odors affecting a substantial number of people. The Project would not include any notable source of odors except for very small quantities of coatings that may include organic compounds. Construction odors would be minimal because of the mandatory use of ultra-low sulfur diesel fuel, and odors would not negatively affect a substantial number of people. This impact would be less than significant, and no mitigation is required.

Cumulative Impacts

Cumulative impacts to air resources are described in Section 4.2.3 and with the discussion of CEQA Criterion AQ-3. Concurrent construction of other projects in close proximity to the proposed project site could result in increased local air quality impacts for the limited duration of simultaneous construction activities. Construction-phase emissions from each specific project site would vary, but would occur within an air basin that is a state nonattainment area for ozone and PM10. The effects of the cumulative projects would combine with the construction emissions from the Proposed Action to result in a cumulative impact caused by short-term air emissions and contributing to violations of the state ambient air quality standards for ozone and PM10. The Proposed Action's construction-related criteria air pollutant emissions would cease with completion of the 30-month duration, and after that time they would not contribute to long-term nonattainment conditions. All cumulative projects and the Proposed Action would need to comply with the local air district rules and regulations. This means that each project would implement controls for new stationary sources and the control strategies of each applicable air quality management plan, and additional mitigation may be applied through environmental permitting by lead agencies. With implementation of the controls and mitigation measures, the contribution of the Proposed Action and alternatives to air quality impacts would not be cumulatively considerable under CEQA.

4.3 Global Climate Change

4.3.1 Impact Assessment Methodology

This section analyzes the greenhouse gas emissions (GHGs) from the proposed Palen Solar Project, and evaluates the consistency of the Proposed Action and alternatives with the applicable plans and programs that have been adopted for the purpose of reducing GHG emissions. This assessment includes a quantitative analysis of potential GHG emissions from construction and operation, including the avoided GHG emissions associated with fossil-fuel fired electricity generation that would be displaced by producing electricity from renewable resources.

Climate change effects are long-term, global, and inherently cumulative because no single activity or source of GHG emissions is large enough to trigger global climate change on its own. Instead, climate change is the result of the contributions of countless past, present, and future sources. The cumulative impact analyses for the Proposed Action and alternatives include GHG impacts from construction, operations, and decommissioning activities, as well as GHG reductions achieved by the operation of planned renewable energy projects.

To put context around the GHG analysis, this Draft SEIS quantifies net GHG emissions from the alternatives and compares the emissions to the regulatory threshold level for federal GHG mandatory emissions reporting requirements to determine whether the GHG emissions would contribute substantially to global climate change. This threshold amount is derived from the 40 CFR Part 98, Mandatory Reporting of Greenhouse Gases Rule, through which the U.S.EPA requires mandatory reporting of GHG emissions for facilities that emit more than 25,000 metric tons of carbon dioxide equivalent (MTCO2e) emissions per year.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Any applicable mitigation measures are referenced by title and number in the discussion of effects (Section 4.3.2). Because no mitigation measures are recommended, none are presented in Section 4.3.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. None of the APMs are relevant to global climate change.

4.3.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The Proposed Action would install a 500 megawatt (MW) nominal capacity, alternating current (AC) solar photovoltaic (PV) energy-generating project that would be expected to produce approximately 1,599,000 megawatt-hours per year (MWh/y) in eastern Riverside County (see Section 2.2). The proposed solar facility would achieve this level of production, which equates to a total annual average capacity factor of 36.5% by using a motorized single-axis tracking system to allow PV panels to rotate from east to west, following the movement of the overhead sun through the day.

Proposed Action: Direct Effects

Emissions due to Development Activities: Construction; Operations and Maintenance; and Closure, Decommissioning and Restoration. The Proposed Action includes the construction and operation of the proposed solar facility and supporting components. Development of the facility would require on-site and off-site construction activities that would result in short-term, unavoidable increases in equipment and vehicle GHG exhaust emissions. The combustion of diesel fuel to provide power for the use of various construction equipment and vehicles results in directly emitted GHG over the anticipated duration of construction of 30 months. Because CO_2 has an atmospheric lifetime of from 50 to 200 years, assessing the impacts of limited-duration construction-phase GHG emissions usually involves averaging or amortizing the total emissions created by the construction effort over each project's expected operating life. Construction activities would emit approximately 53,941 MTCO2e spread over the construction duration of 30 months, and this is an equivalent rate of 1,798 MTCO2e per year, amortized over the anticipated operating life of the proposed solar facility. (Emissions estimator model output report is provided in Appendix E.)

Construction-related GHG emissions would cease with completion the development, and the operational effects of the solar facility would commence with commercial operation possibly being phased between 2018 and 2020. The anticipated operational lifespan of the proposed solar facility is estimated to be at least 30 years. The GHG emissions occurring during operation and maintenance result from the fossil-fuel combustion used for routine upkeep of the project site, security, emergency generators, employee commuting trips, and vegetation removal. The septic system for the wastewater from up to 12 on-site personnel would vent negligible amounts (on the order of 1 MTCO2e) in comparison with fossil fuel use. The level of O&M activities, size of the workforce, and annual rate of GHG emissions from fossil fuel use during operations would be much lower than those during construction. Based on the activities described in Section 2, Proposed Action and Alternatives, and based on the approach to emissions calculations in Section 4.2, Air Resources, the direct emissions due to O&M would be approximately 2,134 MTCO2e per year.

Additionally, sulfur hexafluoride (SF_6) is used as an insulating gas in electric power transmission and distribution equipment, such as the circuit breakers at the switchyard. Although SF_6 is a potent GHG, this pollutant is controlled through compliance with CARB regulations to report and reduce SF_6 emissions from gas-insulated switchgear. The direct annual emissions of SF_6 would be approximately 12 MTCO2e [PSPP PA/FEIS Section 4.3, p. 4.3-4].

Project-specific GHG emissions for closure activities and during the closure, decommissioning, and restoration processes are anticipated to be comparable in type and magnitude to, but likely to be lower than, the construction emissions, as discussed above.

Loss of Carbon Uptake due to Land Use Conversion. In addition to direct emission of GHGs caused by development activities, development would cause the clearing of land and complete removal of vegetation over most of the project site. This would reduce the ongoing natural carbon uptake by vegetation and soil. The loss of carbon uptake depends on what fraction of natural vegetation on the site would be cleared for permanent installation of foundations, roads, or other onsite facilities, and on efforts to minimize soil erosion or protect existing habitat to minimize the loss of carbon uptake. The actual amount of this loss is uncertain because it would depend on the particular characteristics of the site, and data on rates of sequestration by vegetation and soils are approximations.

One study of the Mojave Desert indicated that the desert may uptake carbon in amounts as high as 100 grams per square meter per year, as discussed in this Supplemental EIS/EIR Section 3.3 and in the PSPP PA/FEIS Section 3.3.7 (p. 3.3-9). This would equate to a reduction in carbon uptake in terms of CO_2 of 1.48 MT per acre per year for areas with complete vegetation removal and soil disturbance. An alternative factor discussed in the DRECP EIS for the carbon mass sequestered in a given area is 4.31 MT of CO_2 per acre per year for "grasslands," as reported by the California Climate Action Registry and used in the California Emissions Estimator Model (CalEEMod, 2013). This factor for carbon accumulation includes woody vegetation and other non-grass vegetation such as herbs and brushes and shrub communities.

The site stabilization efforts and plans to protect vegetation, soils, and habitat included with the Proposed Action would ensure that the loss of natural carbon uptake would not exceed a high-end estimate of 4.31 MTCO2e per year per acre. Absent a reliable site-specific factor, this factor is a proxy for removing the natural sequestration capabilities within the 4,200 acres of proposed permanent disturbance. At this rate, up to 18,100 MTCO2e per year of sequestration capability could be lost. Because natural vegetation would be maintained where possible, the Proposed Action includes steps to recapture the natural rate of carbon sequestration and minimize the loss of carbon uptake.

Emissions Avoided by Producing Electricity. The Proposed Action is anticipated to produce approximately 1,599,000 MWh/y of renewable energy output for delivery to the grid, and this rate of annual production would avoid the need to produce electricity from the other existing and conventional fossil-fueled power plants on the grid. Under the "Proposed Near-Term Method for Estimating Generation Fuel Displacement by Avoided Use of Grid Electricity" (CEC, 2015), the electricity produced by the Proposed Action would displace about 604,000 MT of CO_2 annually that would otherwise be emitted by California's flexible natural gas-fired resources. (Calculation of avoided GHG is shown in Appendix E.)

Total GHG Emissions. Because the GHG avoided from fossil fuel-fired power plants would greatly exceed the GHG emissions caused by renewable energy development activities and land use conversion, the electricity produced under the Proposed Action would measurably contribute towards reducing California's GHG emissions by approximately 582,000 MTCO2e per year. The total GHG emissions of the Proposed Action are shown in Table 4.3-1.

Table 4.3-1. Total GHG of Proposed Action (metric tons per year)

Activity	One-Time During Construction (MTCO2e)	Proposed Action (MTCO2e per year)
Construction	53,941	—
Construction, 30-year Amortized	—	1,798
Operations and Maintenance	—	2,134
Equipment Leakage (SF_6)	—	12
Land Use Conversion	—	18,100
Emissions Avoided by Producing Electricity	—	-604,000
Total GHG, Construction and Operations	—	**-581,956**

Source: Analysis using CalEEMod 2013.2.2 and CEC, 2015. (See Appendix E)

Effects of Climate Change on the Proposed Action. Secretarial Order No. 3289 (September 14, 2009), directs DOI bureaus and offices to analyze potential effects of climate change on resource use decisions. In general, these effects include potential changes in flood risk and water supply, sea level rise, changes in wildlife and habitat populations and their migration patterns, new invasions of exotic species and increased threat of wildland fire. Specifically, for the Southwest U.S. including eastern Riverside County, the region is expected to get hotter and significantly drier, and severe and sustained drought will stress water sources and force increasing competition for scarce water resources (U.S. GCRP, 2014).

The potential vulnerabilities of the U.S. energy sector have been identified by the U.S. Department of Energy (U.S. DOE, 2013) in a report titled: "U.S. Energy Sector Vulnerabilities to Climate Change and Extreme Weather." One key finding of the report is that climate change could result in extreme environmental conditions that impact the overall electricity transmission and distribution system. Electricity transmission and distribution systems carry less current and operate less efficiently when ambient air temperatures are higher, and they may face increasing risks of physical damage from more intense and frequent storm events or wildfires.

Solar energy facilities may be adversely impacted by increasing air temperatures and decreasing water availability (U.S. DOE, 2013). Because a photovoltaic (PV) power system consumes relatively low volumes of water, when compared with concentrating solar thermal alternatives or conventional generation, the Proposed Action is not likely to be affected in a measurable way by increasing water scarcity with global climate change. While increasing ambient temperatures could reduce potential generation capacity of the proposed solar PV facility because the efficiency of PV a system generally decreases with increasing temperatures, the magnitude of this change would be small when compared potential changes in the amount of solar resource that varies with cloud cover and haze.

Proposed Action: Indirect Effects

Electricity would be produced by the solar facility in the Proposed Action. The energy delivered to the grid would displace the need for other resources or power plants to generate electricity, which partially avoids the need for other power plants to operate. Producing electricity from solar energy provides an indirect benefit that counters the effects of climate change by avoiding the need to generate electricity from fossil-fueled resources.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would have a generation capacity equal to that of the Proposed Action (500 MW) although the solar fields would be configured to fit within two separate portions of the site, to avoid use of the central desert wash and retain vegetation on the site. Construction, operations and maintenance, and decommissioning activities would be the same as with the Proposed Action. Therefore, GHG emissions due to development activities and GHG emissions avoided by producing electricity would be the same as with the Proposed Action.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would have a generation capacity (200 MW) much less than that of the Proposed Action (500 MW), and this would allow preservation of natural areas and habitat on the

site that would otherwise be developed as part of the Proposed Action. Construction, operations and maintenance, and decommissioning activities would be the same as with the Proposed Action, with proportionately less activity related to the smaller development footprint. GHG emissions due to development activities and GHG emissions avoided by producing electricity would occur at roughly half of the rates otherwise presented for the Proposed Action.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. No new sources of GHG would occur, and no new generation capacity would be installed. No quantity of GHG emissions would be avoided because this alternative would not produce electricity or displace the need for electricity generation from other resources such as fossil fuels.

4.3.3 Cumulative Effects

Geographic Scope

Increasing atmospheric concentrations of GHGs, primarily CO_2 are linked to global climate change (U.S. GCRP, 2014). The analysis presented in this section for the adverse effects of GHG emissions is inherently a cumulative assessment of GHG impacts because climate change effects are long-term and global, and are the result of countless past, present, and future sources of GHG. Because climate change is a global effect, the cumulative geographic scope for this impact is the entire world.

Cumulative Impact Analysis

Global GHG emissions are cumulatively significant. However, the Proposed Action and alternatives would result in lower levels of GHG emissions compared to baseline levels by displacing fossil fuel electricity generation with renewable electricity.

Development of the Proposed Action or any of the other action alternatives in conjunction with the future foreseeable projects and projected growth and development would not result in a cumulative effect as a result of potential conflicts with an applicable plan, policy, or regulation for reducing GHG emissions.

Cumulative renewable energy projects would facilitate the GHG emissions reductions that California expects to achieve by generating electricity from renewable energy resources rather than fossil fuel technologies. This displacement of GHGs would be consistent with the California Global Warming Solutions Act (AB 32), the Climate Change Scoping Plan, and other GHG reduction goals adopted by California including the targets for 2030 established pursuant to SB 32 (2016) and SB 350 (2015). Individual renewable energy projects would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Other cumulative projects would be required to comply with California's existing regulations that address climate change. By generating electricity from renewable resources and displacing GHGs, the potential impacts to global climate change of the Proposed Action and alternatives would not be cumulatively considerable.

4.3.4 Mitigation Measures

No mitigation measures are recommended to reduce or avoid adverse impacts to global climate change.

4.3.5 Residual Effects after Implementation of Mitigation Measures

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation

4.3.6 Unavoidable Adverse Impacts

There would be no unavoidable adverse climate change or GHG-related impacts associated with the Proposed Action or alternatives.

4.3.7 CEQA Significance Thresholds and Determinations

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the Proposed Action and alternatives would have significant impacts on GHG emissions if they would:

GHG-1 Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

GHG-2 Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

GHG-1 Generate Greenhouse Gas Emissions

This criterion assesses whether the Proposed Action or an alternative would generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. Riverside County's Climate Action Plan (CAP) includes guidance, in Appendix F of the CAP, "Greenhouse Gas Emissions, Screening Tables," and establishes a threshold level of 3,000 MTCO2e per year as emissions increase that may be determined to have a less than significant impact (Riverside County, 2015). The Proposed Action would not trigger this threshold level because the renewable energy facility would achieve an overall net reduction of GHG emissions.

The Proposed Action and alternatives would result in GHG emissions due to construction and operation, and operation of the Project would produce electricity that would displace the need to produce electricity from traditional (fossil-fueled) resources. Separate discussions appear for the GHG emissions caused by construction activities, operations activities such as maintenance and inspection, the effects of land use conversion, and indirect GHG emissions reductions from the energy output provided by the proposed renewable energy power plant. Overall, the effect would be a net reduction of GHG emissions because producing renewable energy would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators, typically from natural gas power plants. The beneficial GHG reduction attributable to the Proposed Action and Reduced Footprint

Alternative totals approximately 582,000 MTCO2e per year (see Table 4.3-1). The other alternatives would have a smaller beneficial GHG reduction. This impact would be less than significant, and no mitigation is required.

GHG-2 Conflict with Applicable Plans, Policies, or Regulations

This criterion assesses whether the Proposed Action or an alternative would conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

The Proposed Action and alternatives would produce electricity in a manner that improves California's ability to supply renewable energy to end-use customers and to achieve statewide renewable energy goals. Electricity from the Project would be used to serve the needs of customers and would facilitate compliance with California's Renewables Portfolio Standard (RPS). The GHG emissions avoided by producing electricity would be consistent with and would not conflict with the California's GHG emissions reduction targets, the California Global Warming Solutions Act (AB 32), or the Climate Change Scoping Plan including targets for 2030 established pursuant to SB 32 (2016) and SB 350 (2015). The Project would contribute to the continued reduction of GHG emissions in California's power supply.

Other project activities related to construction and operation would either be exempt from or would be required to comply with California Air Resources Board (CARB) rules and regulations to reduce GHG emissions and would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. As the total GHG emissions generated during construction and operation of the Proposed Action would be considerably less than the GHG emissions avoided, the solar power plant would lead to a net reduction in GHG emissions across the State's electricity system, which would contribute to meeting the State's GHG reduction goals under AB 32. As such, the Proposed Action would not conflict with any applicable GHG management plan, policy, or regulation. This impact would be less than significant, and no mitigation is required.

Cumulative Impacts

Cumulative impacts to global climate change are described in Section 4.3.3. Cumulative renewable energy projects would facilitate the GHG emissions reductions that California expects to achieve by generating electricity from renewable energy resources rather than fossil fuel technologies. This displacement of GHGs would be consistent with the California Global Warming Solutions Act (AB 32), the Climate Change Scoping Plan, and other GHG reduction goals adopted by California including the targets for 2030 established pursuant to SB 32 (2016) and SB 350 (2015). Individual renewable energy projects would cause no other potential conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Other cumulative projects would be required to comply with California's existing regulations that address climate change. By generating electricity from renewable resources and displacing GHGs, the potential impacts to global climate change of the Proposed Action and alternatives would not be cumulatively considerable under CEQA.

4.4 Cultural Resources

This section describes and evaluates the effects related to cultural resources of the Palen Solar Project (Proposed Action), the No Action Alternative, and other alternatives. However, it modifies the analysis to account for the updated environmental baseline and the PV technology. This analysis incorporates the cultural resources analysis from the following documents:

- PSPP 2011 PA/FEIS Section 4.4 (Cultural Resources; BLM, 2011);
- PSPP 2010 RSA Part II Section C.3 (Cultural Resources and Native American Values; BLM, 2010).

New information updates since 2010 and 2011 are also drawn, where applicable, from the:

- PSEGS 2013 Draft SEIS Section 4.4 (Cultural Resources; BLM, 2013);
- PSEGS 2013 Final Staff Assessment Part B Section 4.3 (Cultural Resources; CEC, 2013); and
- New studies associated with the Palen Solar Project (Tennyson 2017; Tennyson et al., 2017).

4.4.1 Impact Assessment Methodology

This section analyzes the impacts of the construction, operation and maintenance and closure and decommissioning of the Project related to cultural resources. The potential for impacts to cultural resources depends on whether such resources are present and whether they actually would be encountered during project activities. Cultural resources include materials (e.g., artifacts, structures, or land modifications) that reflect the history of human development as well as places that are valued by Native Americans or local national/ethnic groups. Section 3.4 describes the resources present in the project area.

This analysis evaluates the structural and cultural evidence of human development in the vicinity of the project site and recommends appropriate mitigation measures to avoid or reduce impacts to significant cultural resources (listed on or eligible to the National Register of Historic Places or the California Register of Historical Resources) in the event of project-related disturbance. Prehistoric, ethnographic including culturally sensitive areas and historic resources are considered in this assessment.

The basic regulatory process for assessing impacts related to cultural resources consists of five steps:

- Determining the appropriate geographic extent of the analysis for the Proposed Action and for each alternative action under consideration (see Section 3.4.2.8);
- Identifying cultural resources inventory within each such geographic area (see Section 3.4.2.8);
- Determining the historical significance of the cultural resources in the inventory for each geographic area, unless the construction, operation and maintenance, and decommissioning and closure of the proposed or alternative actions would avoid particular resources (See Section 4.4.2.1 below; Tennyson et al., 2017;);

- Assessing the character and the severity of the effects of the proposed and alternative actions on the significant historic properties in each respective inventory that cannot be avoided (see Section 4.4.2, below); and
- Developing measures that would address those effects (see Section 4.4.4 below).

Area of Potential Effects

As stated in the PSPP PA/FEIS, the regulations implementing NHPA Section 106 define the Area of Potential Effects (APE) as the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking (36 CFR 800.16(d)). In addition, the APE may be buffered for purposes of cultural resource inventory to facilitate the identification of resources that may be located in proximity to the APE and indirectly affected by a proposed project or to allow the redesign of project components to avoid direct effects to cultural resources.

Both a direct effects APE and an indirect effects APE have been defined for the Palen Project. The APE for direct effects is the geographic area within which a project may directly cause physical damage or destruction to the characteristics of the resource that qualifies it for inclusion in the NRHP. This area is the Palen project area, with a buffer to account for construction techniques and small changes in project design. For purposes of complying with Section 106, the direct effects APE consists of 3,969.0 acres for the solar field, substation, and operations and maintenance building, which includes a 30-foot buffer around the site boundary. In addition, it includes a 563.54-acre 600-foot-wide transmission line corridor that is 6.93 miles long. The direct effects APE expands to a radius of 600 feet at proposed transmission line pull sites. In total, the direct effects APE consists of 4,532.56 acres. The direct APE includes 63.4 acres of private land (Tennyson, 2017). Approximately 12 acres within direct APE that has not been surveyed to BLM Class III standards. These areas will either be removed formally from the APE, or will be surveyed later, prior to project approval.

The APE for indirect effects is the geographic area within which a project may change the setting of a resource when the setting alters the characteristics of the resource that qualifies it for inclusion in the NRHP. These limits are based upon the distance from which project components can be seen. Resources closer to the Palen Project are considered to have greater indirect effects. The indirect effects APE consists of the direct APE with a 5-mile buffer, which results in an area of approximately 123,214 acres.

Assessing Effects

As stated in the PSPP PA/FEIS, the core of a cultural resources analysis under NEPA and Section 106 is the assessment of the character of the effects that a proposed or alternative action may have on significant historical properties (i.e., cultural resources listed on or eligible to the NRHP). The analysis takes into account direct, indirect and cumulative effects. The assessment of effects under CEQA is discussed in Section 4.4.7 (CEQA Significance Thresholds and Determinations).

In accordance with 36 CFR 800.5 of the Advisory Council on Historic Preservation's implementing regulations, which describe criteria for adverse effects, impacts on cultural resources are

considered significant if one or more of the following conditions would result from implementation of the Proposed Action:

a. *An undertaking has an effect on a historic property when the undertaking may alter characteristics of the property that may qualify the property for inclusion in the NRHP. For the purpose of determining the type of effect, alteration to features of a property's location, setting, or use may be relevant, depending on the property's significant characteristics, and should be considered.*

b. *An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:*

   - *Physical destruction, damage, or alteration of all or part of the property;*
   - *Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the NRHP;*
   - *Introduction of visual, audible, or atmospheric elements that are out of character with the property or that alter its setting;*
   - *Neglect of the property, resulting in its deterioration or destruction; and*
   - *Transfer, lease, or sale of the property.*

Consideration is given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the NRHP. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. A formal finding of effect under Section 106 is made for the proposed undertaking as a whole rather than for individual resources affected by the undertaking.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.4.2). The full text of each measure, or reference to its location in this SEIS/EIR, is presented in Section 4.4.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. Those relevant to cultural resources are described in Section 4.4.4.

4.4.2 Direct and Indirect Effects

Under NEPA, direct and indirect effects are those that are more clearly and immediately attributable to the implementation of proposed or alternative actions. Direct effects are those "which are caused by the [proposed or alternative] action and [which] occur at the same time and place" (40 CFR 1508.8(a)). Direct impacts to cultural resources are caused by project development, construction, and co-existence. Indirect effects are those "which are caused by the [proposed or alternative] action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR 1508.8(b)).

The NHPA Section 106 regulations narrow the range of direct effects and broaden the range of indirect effects relative to the definitions of the same terms under NEPA. Under the NHPA, the term "effect" "means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR 800.16(i)). In practice, a "direct effect" under Section 106 is limited to the direct physical disturbance of a historic property. Effects that are immediate but not physical in character, such as visual, auditory, or atmospheric intrusions, and reasonably foreseeable effects that may occur at some point subsequent to the implementation.

Adverse effects on historic properties are typically considered permanent as these resources are finite and disturbance of them, particularly archaeological sites, cannot be reversed. However, indirect effects to historic properties can be temporary, if projects do not permanently impact associated resources and are removed at a future date.

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

4.4.2.1 Proposed Action

The Project would consist of a 500 MW solar photovoltaic facility on approximately 4,221 acres of public land administered by the BLM. In addition, a 230 kilovolt (kV) generation interconnection line (gen-tie line), and an operations and maintenance facility are also proposed for construction and operation at the project site. The gen-tie line would interconnect with the power grid at Southern California Edison's (SCE) Red Bluff Substation.

Proposed Action: Direct Effects

Ground-disturbing activities associated with the construction, operation and maintenance and closure and decommissioning of the Proposed Action would have a direct impact on cultural resources by damaging and displacing artifacts, diminishing site integrity and altering the characteristics that make the resources significant.

Anticipated disturbance below-ground impacts associated with the Proposed Action potentially affecting cultural resources include:

- Minimal grading would disturb the overall project site to a maximum depth of 18 inches.
- The photovoltaic panel supports would be installed with a pile driver. No excavation for foundations would be required. The electrical collection system would be buried in trenches would cause ground disturbance down to a maximum depth of 3 feet.
- Excavation associated with the construction of operations and maintenance building and the substation would cause ground disturbance down to a maximum depth of 3 feet.
- Excavation associated with the construction 6 water retention basins would cause ground disturbance down to a maximum depth of 10 feet.
- Along the linear facilities corridor, the construction of the access road would cause ground disturbance down to a maximum depth of 18 inches. The transmission line supports would cause ground disturbance down to a depth of 30 feet and a maximum diameter of 12 feet.

The area of both temporary and permanent disturbance is 4,318 acres (Table 2-1, Chapter 2). Based on this information, 1 of the 77 resources recorded during cultural resource surveys within the direct effects APE is eligible for the NRHP and CRHR and is therefore considered a historic property. This resource is located along the transmission line and would be avoided and protected from damage during construction. Many of the remaining 76 resources will be destroyed by the Project. In addition, 384 isolates (16 prehistoric, 368 historic) are present within the direct APE. However, as none of these resources are eligible for the NRHP or CRHR, there are no direct impacts to historic properties as a result of the Project. Impacts to these resources are addressed in cumulative impacts.

Direct impacts to historic properties would be mitigated by MM CUL-1 through MM CUL-13 (the full text of all measures is presented in Section 4.4.4). The following summarizes how each measure would reduce the impacts of the Project to cultural resources:

- CUL-1 identifies the people who would implement all of the mitigation measures,
- CUL-2 specifies the information the project owner would supply to them,
- CUL-3 provides for the preparation and implementation of the monitoring and discovery plan, which would structure and govern the implementation of the broader treatment program.
- CUL-4 establishes report standards for post review discovery situations.
- CUL-5 would provide training of project personnel to identify, protect, and provide appropriate notice about known and new potential cultural resources in the project construction area.
- CUL-6 and MM CUL-7 would provide construction monitoring and cultural resources discovery protocols.
- CUL-8 (Flag and Avoid) would protect resources along the transmission line from direct effects through avoidance. Specifically, direct impacts to CA-RIV-9481, the DTC/C-AMA associated 18th Ordinance Battalion Campsite along the proposed gen-tie, would be addressed by this measure, which would protect the resource from destruction through avoidance.
- CUL-9 and CUL-10 address direct impacts to prehistoric-period archaeological resources inadvertently discovered during construction.
- CUL-11 and CUL-12 address direct impacts to historic-period archaeological resources inadvertently discovered during construction.
- CUL-13 (Memorandum of Agreement) clarifies that a Memorandum of Agreement (MOA) shall be developed and that it shall govern the resolution of any adverse effects on historic properties if such effects are found by the BLM during Section 106 NHPA review for the Project.
- CUL-14 (Update Palen Dry Lake ACEC Management Plan) would update the ACEC management plan to modern standards if any adverse effects to significant cultural values within the Palen Dry Lake ACEC are identified by the BLM during Section 106 NHPA review of the Project.

While no additional ground disturbance is planned during the operation of the facility, maintenance may require some. Similarly, while no new areas of ground disturbance are proposed for decommissioning, decommissioning activities may not be limited to disturbing only previously disturbed

soils at depth, and excavation for electrical wiring and steel support beams may occur to a deeper depth than excavation during construction.

Proposed Action: Indirect Effects

The construction, operation and maintenance and closure and decommissioning of the Proposed Action could have an indirect impact on historic-era architectural resources and culturally sensitive areas. While auditory and atmospheric intrusions are possible, the primary indirect impact is expected to be associated with visual impacts associated with the introduction of a large industrial facility to the landscape.

Anticipated indirect impacts associated with the Proposed Action potentially affecting cultural resources include:

- In the solar array fields, the non-reflective photovoltaic panels would intrude into the flat landscape to a maximum height of 18 feet.
- The operations and maintenance building would intrude into the flat landscape to a maximum height of 19 feet.
- The transmission line would create a visual intrusion into the flat landscape to a maximum height of 135 feet.

The indirect effects APE is a 5-mile radius of the direct effects APE. Research to identify resources that would be subject to indirect effects focused on built-environment resources and known resources that are especially sensitive to changes in setting through the introduction of modern industrial facilities such as culturally sensitive areas.

Four culturally sensitive areas eligible for the NRHP and CRHR were identified within the indirect APE. The four areas include: the Palen Dry Lake ACEC, the Alligator Rock ACEC, the Corn Springs ACEC, and the Palen-Ford Playa Dunes ACEC. All have been recommended eligible for the NRHP and the CRHR as districts. The BLM disagrees with this recommendation. Government to government consultation between the BLM and interested tribes is ongoing to help confirm whether these areas are eligible for the NRHP and CRHR and whether eligible values would be affected by the Proposed Action. These resources are described in detail in Section 3.4.2.8. In order to determine if these areas would be subject to indirect Project impacts, a visual effects analysis was performed utilizing a series of eight key observation points (KOP) photographed in the spring of 2016 from which simulations of the proposed PSP design were used (Tennyson et al., 2017: Appendix E). This analysis identified which portions of culturally sensitive areas would have views of the proposed Project. While the solar field and gen-tie line would be within the viewshed of the four ACECs, project components would be difficult to see from the Alligator Rock ACEC, the Corn Springs ACEC, and the Palen-Ford Playa Dunes ACEC. In addition, because similar industrial infrastructure already exists within the viewshed of these resources, the contribution of the proposed Project would be minor. As such, these three areas will not be subject to impacts from the Project so they are not considered further here.

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, Culturally Sensitive Areas Identified in the Project

Indirect Effects APE) suggests that the construction of the Proposed Action would not effect historic properties. However, government-to-government consultation between BLM and interested tribes is ongoing to confirm that Palen Dry Lake ACEC is not eligible for the NRHP and CRHR under Criterion A/1 and that the Project would not result in impacts to this area. The analysis may be modified as a result of this consultation.

Mitigation Measure CUL-13 (Memorandum of Agreement; see Section 4.4.4) would ensure that an MOA would be developed that would govern the resolution of direct, indirect and cumulative adverse effects on historic properties if any are identified (the full text of all measures is presented in Section 4.4.4). If indirect impacts to the Palen Dry Lake ACEC are identified, they would be addressed by MM CUL-14 (Update Palen Dry Lake ACEC Management Plan) which would update the management plan to modern standards.

4.4.2.2 Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would eliminate use of the central desert wash that crosses the project site from southwest to northeast, dividing the Project into two solar fields. Like the Proposed Action, this alternative would use photovoltaic panels and would involve minimal grading. Since the 3,100 acres within the fenceline is a 26 percent reduction as compared with the 4,221 acres within the fenceline for the Proposed Action, the impacts to cultural resources would be less than in the Reduced Footprint Alternative as compared with the Proposed Action. Although they are not eligible for the NRHP or CRHR, fewer known resources would be destroyed by the Project. In addition, fewer as yet unidentified historical properties would be damaged during ground disturbing activities. Direct impacts to newly identified resources would be addressed through MM CUL-3 (Monitoring and Discovery Plan).

Direct impacts to newly identified resources would be addressed through MM CUL-3 (Monitoring and Discovery Plan). Direct impacts to CA-RIV-9481, the DTC/C-AMA associated 18th Ordinance Battalion Campsite, would be addressed by MM CUL 8 (Flag and Avoid) which would protect the resource from destruction through avoidance. Overall, the direct impacts of this alternative would be less than the Proposed Action.

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, Culturally Sensitive Areas Identified in the Project Indirect Effects APE) suggests that the Reduced Footprint Alternative would not affect historic properties. However, government-to-government consultation between BLM and interested tribes is ongoing to confirm that the Palen Dry Lake ACEC is not eligible for the NRHP and CRHR and that this alternative would not result in indirect impacts to this area. The analysis may be modified as a result of this consultation. As for the Proposed Action, if indirect impacts to this area are identified they would be addressed by MM CUL-14 (Update Palen Dry Lake ACEC Management Plan), which would update the ACEC management plan to modern standards. The indirect impacts of this alternative would be the same as the Proposed Action. MM CUL-13 (Memorandum of Agreement) would ensure that an MOA would be developed that would govern the resolution of direct, indirect and cumulative adverse effects on historic properties if any are identified (the full text of all mitigation measures is presented in Section 4.4.4).

4.4.2.3 Alternative 2 – Avoidance Alternative

The Avoidance Alternative would limit developable land based on DRECP Conservation and Management Actions (CMAs) that protect desert dry wash woodland and establish a 200-foot buffer where no construction would occur. Like the Proposed Action, this alternative would use photovoltaic panels and involve minimal grading.

The direct effects of this alternative would be similar to those described for the Proposed Action. However, the 1,620 acres within the fenceline is over 60 percent smaller than the 4,221 acres of the Proposed Action. Although they are not eligible for the NRHP or CRHR, fewer known resources would be destroyed by the Project. In addition, fewer as yet unidentified historical properties would be damaged during ground disturbing activities. Direct impacts to newly identified resources would be addressed through MM CUL-3 (Monitoring and Discovery Plan).

Direct impacts to CA-RIV-9481, the DTC/C-AMA associated 18th Ordinance Battalion Campsite, would be addressed by MM CUL 8 (Flag and Avoid) which would protect the resource from destruction through avoidance. Overall, direct impacts as a result of this alternative would be less than the Proposed Action.

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, Culturally Sensitive Areas Identified in the Project Indirect Effects APE) suggests that the Avoidance Alternative would not results in indirect adverse effects on historic properties. However, government-to-government consultation between BLM and interested tribes is ongoing to confirm that the Palen Dry Lake ACEC is not eligible for the NRHP and CRHR under criterion A/1 and that this alternative would not result in potential indirect impacts to this area. As with the Proposed Action, if indirect impacts to the area are identified they would be addressed by MM CUL 14 (Update Palen Dry Lake ACEC Management Plan) which would update the management plan to modern standards. The indirect impacts of this alternative would be the same as the Proposed Action. MM CUL-13 (Memorandum of Agreement) would ensure that an MOA would be developed that would govern the resolution of direct, indirect and cumulative adverse effects on historic properties if any are identified.

4.4.2.4 No Action Alternative

The No Action Alternative would result from the denial of the Palen ROW application CACA-48810; a ROW grant would not be authorized. Although the project site would not be developed, the impacts to cultural resources may only be delayed. Other projects or linear facilities could potentially be developed at this location, because it is located in the Riverside East Solar Energy Zone (SEZ) of BLM's Western Solar Plan and is land designated as a Development Focus Area (DFA). Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.4.3 Cumulative Effects

The regulations implementing Section 106 of the NHPA contemplate close coordination between the NEPA and NHPA processes (36 CFR 800.8), and expressly integrate consideration of cumulative concerns within the analysis of a proposed action's potential direct and indirect effects by defining "adverse effect" to include "reasonably foreseeable effects caused by the undertaking that

may occur later in time, be farther removed in distance or be cumulative" (36 CFR 800.5(a)(1)). When the results of cultural resources pedestrian surveys are not available for projects included in the cumulative analysis, calculating the number of cultural resources likely destroyed by construction per acre is considered an acceptable quantitative cumulative analysis method, and is used below. Central to this method is the understanding that cultural resources are a non-renewable resource. The average number of resources per acre is calculated by using the survey results from recent, nearby projects. This regional resource density per acre is then applied to the "Existing Projects or Programs in the Project Area" and "Future Foreseeable Projects in the Project Area" as way of calculating the number of resources that existed prior to industrial develop of the project area, the number of resources that have been destroyed since that time and the number of resources that may be destroyed in the future. Frequently, the lists of projects used in cumulative analyses are missing old projects where project information is not easily available. This analysis has supplemented the cumulative project list with key past projects.

For the cumulative analysis of cultural resources, the relevant geographic scope was defined to include a 2-mile strip centered on I-10 in eastern Riverside County. The area is equivalent to a 4-mile-wide strip, 48 miles long, between Blythe and Desert Center, with an area of 192 square miles (122,440 acres).

Geographic Scope

Past, present and reasonably foreseeable future actions would cause impacts that could combine with the impacts of the Project to cause an adverse cumulative impact related to cultural resources. As described above, the results of recent pedestrian surveys in eastern Riverside County (Desert Sunlight, Genesis, Blythe, and Palen Solar Projects) were used to calculate an average resource density for the cumulative study area. The average resource density was used to estimate the number of resources that have been destroyed by past, present and future foreseeable projects in Table 4.1-1 (Existing Projects or Programs in the Project Area) and Table 4.1-2 (Future Foreseeable Projects in the Project Area). Information about the number of acres disturbed (in contrast to area surveyed) for the Desert Sunlight, Genesis, Blythe, and Palen Solar Projects among others, was used in this analysis.

The results of impact calculations are summarized below in Table 4.4-1. The information in Table 4.4-1 was supplemented with key past projects that likely destroyed many cultural resources in the region, such as the construction of the I-10 freeway. Supplementary projects are indicated in italics, and the assumptions related to these projects are described in detail following the table.

Table 4.4-1. Cumulative Analysis Results: Estimated Number of Cultural Resources per Acre

Location	Acres	Estimated Number of Cultural Resources (Acres x 0.019)	Estimated Number of Potentially Eligible Cultural Resources (Acres x 0.002)
Acres surveyed for Desert Sunlight, Genesis, Blythe, and Palen Solar Projects (Note: because these projects have been built or already underwent environmental review – these data are known and not estimated).	29,574	554 = Average Density of 0.019 sites per acre	70 = Average Density of 0.002 sites per acre
Eastern Riverside County (Blythe to Desert Center)	122,440	2,326	245

Table 4.4-1. Cumulative Analysis Results: Estimated Number of Cultural Resources per Acre

Location	Acres	Estimated Number of Cultural Resources (Acres x 0.019)	Estimated Number of Potentially Eligible Cultural Resources (Acres x 0.002)
Existing Projects or Programs in the Project Area			
Blythe PV Project	200	4	1
McCoy Solar Project	8100	154	16
Genesis Solar Energy Project	1950	37	4
Blythe Solar Power Project	4100	78	8
Desert Sunlight Solar Project	4400	84	9
SCE Red Bluff Substation	75	2	1
Devers–Palo Verde 1 Transmission Line	*116*	*2*	*1*
Devers–Palo Verde 2 Transmission Line	*116*	*2*	*1*
SCE Colorado River Substation	90	2	1
Chuckwalla Valley Prison and Ironwood Prison	*1,720*	*33*	*4*
I-10 Freeway	*1163*	*22*	*3*
Kaiser Eagle Mountain Mine	*3,500*	*67*	*7*
Existing Projects Total	**25,530**	**487**	**56**
Future Foreseeable Projects in the Project Area			
Desert Southwest Transmission Line	*116*	*2*	*1*
Sonoran Energy Project	30	1	1
Eagle Mountain Pumped Storage Project	90	2	1
Rice Solar Energy Project	1410	27	3
Desert Quartzite Solar	4845	93	10
Crimson Solar	4000	76	8
Blythe Mesa Solar Project	3600	69	7
Desert Harvest Solar Farm	1208	23	3
DC 50 Solar Project	450	9	1
Sun Edison Jupiter Project	1800	34	4
First Solar Development LLC	3500	67	7
SunPower Project	2000	38	4
Plot Plan No.23577 Revised Permit No 2	10	1	1
Paradise Valley Development – Specific Plan No. 339	1800	34	4
Future Projects Total	**24,859**	**476**	**55**

Supplementary projects (in italics above) are described in more detail as follows:

- Construction of Chuckwalla Valley and Ironwood State Prisons: Construction of the Chuckwalla Valley and Ironwood State Prisons disturbed approximately 1,720 acres, suggesting that 29 cultural sites were destroyed pursuant to this work.
- Construction of I-10: Interstate-10 is a four-lane divided highway with associated bridges, off-ramps and a berm system. Assuming a minimum width of 200 feet and length of 48 miles, this project disturbed approximately 1,163 acres, suggesting that 22 cultural sites were destroyed during its construction.

- The Devers–Palo Verde 1 and Devers–Palo Verde 2 Transmission Lines: Based on the construction of the access road and excluding the transmission tower pads, a width of 20 feet and a length of 48 miles were assumed for this analysis, resulting in approximately 116 acres of disturbance for each projects (232 acres total) and the destruction of approximately 2 cultural resources each (4 total).
- Mining activities at the Kaiser Eagle Mountain Mine: mining activities at the Kaiser Eagle Mountain Mine may have disturbed about 3,500 acres, destroying an estimated 67 cultural resources.

Together, existing actions within the cumulative study area as summarized in Table 4.4-1 disturbed an estimated 25,530 acres, or 21 percent of the cumulative study area (122,440 acres), and may have destroyed 487 of the estimated 2,362 cultural resources.

Present and reasonably foreseeable actions in Eastern Riverside County include 14 solar projects, development of the Chuckwalla Raceway, four new transmission lines and other activities identified as part of the cumulative scenario. Although some of these projects may not be built, this analysis conservatively assumes the maximum number of cultural resources would be destroyed. Reasonably foreseeable actions within the cumulative study area as summarized in Table 4.4-1 would disturb 24,859 acres, or 20 percent of the cumulative study area (122,440 acres), and destroy 476 cultural resources.

The results of this analysis suggest that past, present and reasonably foreseeable future actions have already destroyed, and is projected to destroy, approximately 41 percent of the cultural resources that are estimated to have originally existed in the cumulative analysis study area. This analysis does not take into account the variation in cultural resource types as well as the variation in significant values associated with the NRHP-eligible resources in the cumulative study area. Also, it is possible that cultural resource types regularly considered not eligible in accordance with current standards and practices may have eligible values in the future as regional research advances and new archaeological methods (such as dating techniques) are discovered and become accessible to researchers in the cumulative study area.

Cumulative Impact Analysis

A total of 77 archaeological sites and built-environment resources are present within the direct APE of the Proposed Action. One of these resources is eligible for the NRHP and CRHR. When combined with the impacts to cultural resources from past, present and reasonably foresee-able future actions direct impacts associated the Project would contribute approximately 3 percent of the cumulative impacts within the cumulative analysis study area (77 of an estimated 2,326 cultural resources destroyed, and 1 of 245 NRHP and CRHR eligible resources). Twenty-three of the 77 resources are WWII-era historic resources associated with the DTC/C-AMA. While these resources are not eligible for listing on the NRHP and CRHR, their destruction as a result of the Project contributes in a small but measureable way to the DTC/C-AMA as a whole. Cumulative impacts to the DTC/C-AMA would be addressed through MM CUL-15 (Palen Pass Historic District Recording).

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, under the sub-heading Culturally Sensitive Areas

Identified in the Project Indirect Effects APE) suggests that the Project would not result in cumulative indirect adverse effects on historic properties.

4.4.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are four APMs relevant to cultural resources (Section 2.2.7, Chapter 2), as presented in Table 4.4-2.

Table 4.4-2. Applicant Proposed Measures for Cultural Resources

APM #	Text	Explanation
APM-21	Identify places of traditional cultural and religious importance to federally recognized Tribes and maintain access to these locations for traditional use.	Identification of traditional cultural and religious places has been incorporated into the Project. Impacts to them will be addressed through MM CUL-13 and -14.
APM-22	Design activities to minimize impacts on cultural resources including places of traditional cultural and religious importance to federally recognized Tribes.	The Project has incorporated design elements to minimize impacts to cultural resources and places of traditional cultural and religious importance. However, the changes to the rural setting result in impacts that require additional mitigation. Impacts to them will be addressed through MM CUL-13 and -14.
APM-23	Develop partnerships to assist in the training of groups and individuals to participate in site stewardship programs.	Mitigation Measure CUL-14 satisfies this APM, which addresses indirect impacts to places of traditional cultural and religious importance for Tribes.
APM-24	Promote desert vegetation types/communities by avoiding them where possible, then use required compensatory mitigation, off-site mitigation, and other means to ensure Native American vegetation collection areas and practices are maintained.	Measures such as VEG-8 (Impact Avoidance and Minimization Measures) satisfy this APM. No Native American vegetation collection areas have been identified within the project area, and so no additional mitigation has been proposed.

Sixteen mitigation measures are recommended to reduce the severity of the impacts defined in Sections 4.4.2 and 4.4.3. These measures are based upon the cultural resources mitigation measures from PSPP, but they have been revised and supplemented as follows:

MMs CUL-1 through MM CUL-12 are nearly identical to those in PSPP. They have been revised to reflect that the CEC is no longer participating in the Project, removing CEC specific terminology and replacing it with BLM specific terminology. Several measures were deleted as they no longer apply to the Project and as a result the measures were renumbered. These measures are PSPP MM CUL-1, CUL-2, and CUL-15. Please refer to Palen Solar Power Project Final EIS Appendix B, Conditions of Certification Table B-1, for the full text of these deleted measures.

The mitigation measures recommended for the Palen Solar Project are presented below. Mitigation Measures CUL-1 through CUL-14 relate to project-specific impacts for the Proposed Action or the alternatives, and CUL-15 for cumulative impacts.

CUL-1 **Cultural Resources Personnel.** (Previously PSPP MM CUL-3) Prior to the issuance of a Notice to Proceed by BLM, the project owner shall obtain the services of a Cultural Resources Specialist (CRS) and one or more alternate CRSs, if alternates are needed. The CRS shall manage all monitoring, mitigation, curation, and reporting activities for the Project. The CRS shall have a primarily administrative and

coordination role for the Project. The CRS may obtain the services of Cultural Resources Monitors (CRMs), if needed, to assist in monitoring, mitigation, and curation activities. The CRS shall have a BLM California cultural resource use permit and all cultural staff shall be listed under a BLM California cultural resource use permit and otherwise meet the requirements outlined in BLM Manual 8150. The project owner shall ensure that the CRS makes recommendations regarding the eligibility for listing in the NRHP and California Register of Historical Resources (CRHR) of any cultural resources that are newly discovered or that may be affected in an unanticipated manner.

CUL-2 **Project Documentation for Cultural Resources Personnel.** (Previously PSPP MM CUL-4) Prior to the issuance of a Notice to Proceed by BLM, the project owner shall provide the CRS with copies of the Supplemental EIR/EIS and confidential cultural resources documents, for the Project. The project owner shall also provide the CRS and the BLM project manager with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate USGS quadrangles and maps at an appropriate scale (e.g., 1:2400 or 1" = 200') for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and BLM project manager. The BLM project manager shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to BLM project manager approval of maps and drawings, unless such activities are specifically approved by the BLM project manager. If construction of the Project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS and BLM project manager prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and BLM project manager. Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and BLM project manager a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week. The project owner shall notify the CRS and BLM project manager of any changes to the scheduling of the construction phases.

CUL-3 **Monitoring and Discovery Plan.** (Previously PSPP MM CUL-5) Prior to the issuance of a Notice to Proceed by BLM, the project owner shall submit to the BLM project manager for review and approval the monitoring and discovery plan, as prepared by or under the direction of the CRS. The authors' name(s) shall appear on the title page of the monitoring and discovery plan. The monitoring and discovery plan shall specify the impact mitigation protocols for all known cultural resources and identify general and specific measures to minimize potential impacts to all other cultural resources, including those discovered during construction. Implementation of the monitoring and discovery plan shall be the responsibility of the CRS and the project owner. Copies of the Monitoring and Discovery Plan shall reside with the CRS, alternate CRS, and field staff and the project owner's onsite construction manager. No ground disturbance shall occur prior to BLM project manager approval

of the monitoring and discovery plan, unless such activities are specifically approved by the BLM project manager. Prior to issuance of a Notice to Proceed by BLM, the project owner may have the CRS, alternate CRS, complete and submit to BLM for review the monitoring and discovery plan. The monitoring and discovery plan shall include, but not be limited to, the elements and measures listed below.

1. The duties of the CRS shall be fully discussed, including oversight/management duties with respect to site evaluation, data collection, monitoring, and reporting at both known prehistoric and historic-period archaeological sites and any NHPA- and CRHR-eligible (as determined by BLM) prehistoric and historic-period archaeological sites discovered during construction.
2. A general research design shall be developed that:
    a. Charts a timeline of all research activities;
    b. Recapitulates the existing paleoenvironmental, prehistoric, ethnohistoric, ethnographic, and historic contexts and adds to these the additional context of the non-military, historic-period occupation and use of the Chuckwalla Valley, to create a comprehensive historic context for the project vicinity;
    c. Poses archaeological research questions and testable hypotheses specifically applicable to the archaeological resource types known for the Chuckwalla Valley, based on the research questions developed on the archaeological and historical literature pertinent to the Chuckwalla Valley; and
    d. Clearly articulates why it is in the public interest to address the research questions that it poses.
3. Protocols, reflecting the guidance provided in CUL-9 through CUL-12 shall be specified for the treatment of known and newly discovered prehistoric and historic-period archaeological resource types.
4. Artifact collection, retention/disposal, and curation policies shall be discussed, as related to the research questions formulated in the research design. These policies shall apply to cultural resources materials and documentation resulting from evaluation and data recovery at both known prehistoric and historic-period archaeological sites and any NRHP- and CRHR-eligible (as determined by the BLM) prehistoric and historic-period archaeological sites discovered during construction. A prescriptive treatment plan may be included for limited data types.
5. The implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground disturbance and post-ground–disturbance analysis phases of the Project shall be specified.
6. Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.
7. All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas

where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.

8. The commitment to record on Department of Parks and Recreation (DPR) 523 forms, to map, and to photograph all encountered cultural resources over 50 years of age shall be stated. In addition, the commitment to curate all archaeological materials retained as a result of the archaeological investigations (survey, testing, data recovery), in accordance with in accordance with 36 C.F.R. Part 79 and the California State Historical Resources Commission's Guidelines for the Curation of Archaeological Collections, into a retrievable storage collection in a public repository or museum shall be stated.
9. The commitment of the project owner to pay all curation fees for artifacts recovered and for related documentation produced during cultural resources investigations conducted for the Project shall be stated. The project owner shall identify a curation facility that could accept cultural resources materials resulting from the project cultural resources investigations.
10. The CRS shall attest to having access to equipment and supplies necessary for site mapping, photography, and recovery of all cultural resource materials (that cannot be treated prescriptively) from known NRHR-eligible and CRHR-eligible archaeological sites and from NRHR-eligible and CRHR-eligible sites that are encountered during ground disturbance.
11. The contents, format, and review and approval process of the final Cultural Resource Report (CRR) shall be described.
12. Monitoring recommendations for different areas of the direct APE including the level of monitoring intensity based on subsurface sensitivity. However monitoring shall take place during construction and decommissioning.
13. Procedures for discoveries of human remains including a NAGPRA Plan of Action.
14. Tribal Participation Plan shall be appended to the Monitoring and Discovery Plan.

CUL-4 **Cultural Resources Report (CRR).** (Previously PSPP MM CUL-6) The CRR, if required as the result of a discovery during construction, shall conform to California BLM Cultural Resource Use Permit stipulations regarding reporting which include, but are not limited to, those listed in the California Office of Historic Preservation's Preservation Planning Bulletin Number 4(a) December 1989, Archaeological Resource Management Reports (ARMR): Recommended Contents and Format (ARMR Guidelines) for the Preparation and Review of Archaeological Reports.

CUL-5 **Environmental Awareness Program (WEAP).** (Previously PSPP MM CUL-7) Prior to issuance of a Notice to Proceed by BLM and for the duration of ground disturbance, the project owner shall provide Worker Environmental Awareness

Program (WEAP) training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The training shall be prepared by the CRS, may be conducted by any member of the archaeological team, and may be presented in the form of a video. The CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Samples or visuals of artifacts that might be found in the project vicinity;
3. A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
4. A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
5. Instruction that the CRS, alternate CRS, and field staff have the authority to halt ground disturbance in the area of a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
6. Instruction that employees are to halt work on their own in the vicinity of a potential cultural resources discovery and shall contact their supervisor and the CRS or field staff, and that redirection of work would be determined by the construction supervisor and the CRS;
7. An informational brochure that identifies reporting procedures in the event of a discovery;
8. An acknowledgement form signed by each worker indicating that they have received the training; and
9. A sticker that shall be placed on hard hats indicating that environmental training has been completed.
10. No ground disturbance shall occur prior to implementation of the WEAP program, unless such activities are specifically approved by the BLM project manager.

CUL-6 **Construction Monitoring Program.** (Previously PSPP MM CUL-8) The project owner shall ensure that the CRS, alternate CRS, or field staff, to prevent construction and decommissioning impacts to undiscovered resources and to ensure that known resources are not impacted in an unanticipated manner, monitor in accordance with the Monitoring and Discovery Plan.

Archaeological monitoring for this project shall be the archaeological monitoring of the earth-removing activities during construction and decommissioning as specified in the Monitoring and Discovery Plan.

One or more Native American monitors shall be obtained to monitor ground disturbance in areas where Native American artifacts may be discovered. Preference in selecting monitors shall be given to Native Americans with traditional ties to the area that shall be monitored. If efforts to obtain the services of qualified Native American monitors are unsuccessful, the project owner shall immediately inform the BLM project manager. The BLM project manager will either identify potential monitors or will allow ground disturbance to proceed without a Native American monitor.

The research design in the monitoring and discovery plan shall govern the collection, treatment, retention/disposal, and curation of any archaeological materials encountered. On forms provided by the BLM project manager, CRMs shall keep a daily log of any monitoring and other cultural resources activities and any instances of noncompliance with the mitigation measures and/or the Section 106 MOA. Copies of the daily monitoring logs shall be provided by the CRS to the CPM, if requested by the BLM project manager. From these logs, the CRS shall compile a monthly monitoring summary report to be submitted for BLM review monthly. If there are no monitoring activities, the summary report shall specify why monitoring has been suspended. The CRS or alternate CRS shall report daily to the BLM project manager on the status of the Project's cultural resources-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the BLM project manager. In the event that the CRS believes that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the BLM project manager for review and approval prior to any change in the level of monitoring. The CRS, at his or her discretion, or at the request of the BLM project manger, may informally discuss cultural resources monitoring and mitigation activities with County of Riverside staff.

Cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these Mitigation Measures. Upon becoming aware of any incidents of non-compliance with the Mitigation Measures the CRS and/or the project owner shall notify the BLM project manager by telephone or e-mail within 24 hours. The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the Mitigation Measures. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided monthly for the review of the BLM project manager.

CUL-7 **Authority to Halt Construction and Treatment of Discoveries.** (Previously PSPP MM CUL-9) The project owner shall grant authority to halt ground disturbance to the CRS, alternate CRS, and field staff in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS. In the event that a cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the

BLM), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity of the discovery sufficient to ensure that the resource is protected from further impacts. Monitoring and daily reporting, as provided in other Mitigation Measures, shall continue during the Project's ground-disturbing activities elsewhere. The halting or redirection of ground disturbance shall remain in effect until the CRS has visited the discovery, and all of the following have occurred:

1. The CRS has notified the project owner, and the BLM project manager has been notified within 24 hours of the discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of NRHP and CRHR eligibility, and recommendations for data recovery from any cultural resources discoveries, whether or not a determination of NRHP and CRHR eligibility has been made.
2. If the discovery would be of interest to Native Americans, the BLM project manager has notified all Native American groups that expressed a desire to be notified in the event of such a discovery.
3. The CRS has completed field notes, measurements, and photography for a DPR 523 "Primary" form. Unless the find can be treated prescriptively, as specified in the monitoring and discovery plan, the "Description" entry of the DPR 523 "Primary" form shall include a recommendation on the NRHP and CRHR eligibility of the discovery. The project owner shall submit completed forms to the BLM project manager.
4. The CRS, the project owner, and the BLM project manager have conferred, and the BLM project manager has concurred with the recommended eligibility of the discovery and approved the CRS's proposed data recovery plan, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed.

CUL-8 **Flag and Avoid.** (Previously PSPP MM CUL-10) If resources within the transmission line corridor can be spanned rather than impacted, or in the event that new resources are discovered during construction where impacts can be reduced or avoided, the project owner shall:

1. Ensure that a CRS, alternate CRS, or field staff re-establish the boundary of each site, add a 10-meter-wide buffer around the periphery of each site boundary, and flag the resulting space in a conspicuous manner;
2. Ensure that a CRM enforces avoidance of the flagged areas during construction; and
3. Ensure, after completion of construction, boundary markings around each site and buffer are removed so as not to attract vandals.

CUL-9 **Data Recovery for Simple Prehistoric Sites:** (Sparse Lithic Scatters, Cairns, and Pot Drops) (Previously PSPP MM CUL-11) The project owner shall ensure the monitoring and discovery plan includes a data recovery plan for the unanticipated discovery of resource type "simple prehistoric sites." The data recovery plan shall include the use of the CARIDAP protocol on sites that qualify, how to proceed if features or other buried deposits are encountered, and the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location recordation equipment and methods used and describe any post-processing of the data. If allowed by the BLM, prior to the start of ground disturbance within 30 meters of the site boundaries of each of these sites, the project owner shall ensure that the CRS and/or archaeological team members implement the plan, which, for sites where CARIDAP does not apply, shall include, but is not limited to the following tasks:

1. Use location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers) to add to the original site maps the following features: seasonal drainages, site boundaries, location of each individual artifact, and the boundaries around individual artifact concentrations;
2. Request a qualified prehistoric archaeologist and a qualified geoarchaeologist be hired by the project owner to identify the specific landform for each site and its relationship to specific ancient lakeshores of Palen Dry Lake; if a lakeshore is present within 100 meters of the site boundary, include it on the site map;
3. Map and field-record all lithic artifacts (numbers of flakes, the reduction sequence stage each represents, cores, tool blanks, finished tools, hammerstones, and concentrations, and the material types of each) and the other types of prehistoric artifacts present.
4. Map any differential distribution of artifacts and suggest explanations for the distribution;
5. Assess the integrity of the site and provide the evidence substantiating that assessment;
6. Collect for dating and source analyses any obsidian artifacts;
7. Field record the surface location of all other artifacts and collect all ceramic artifacts and botanical and faunal remains for laboratory analysis and curation;
8. Surface scrape to a depth of 5 centimeters a 5-meter-by-5-meter area centered on the artifact concentration, field-record the lithic artifacts as to location, material type, and the reduction sequence stage each represents, record the location of all other artifacts, and retain the obsidian and ceramic artifacts and botanical and faunal remains for laboratory analysis and curation;
9. Excavate one 1-meter-by-1-meter unit in 10-centimeter levels until the unit reaches a depth of 20 centimeters below any anthropogenic materials, placing the unit in the part of the site with the highest artifact density and recording its locations on the site map;

10. Place one 1-meter-by-1-meter excavation unit, as described above, in the center of each concentration if multiple artifact concentrations have been identified;
11. Notify the BLM project manager by telephone or e-mail that subsurface deposits were or were not encountered and make a recommendation on the site's NRHP and CRHR eligibility;
12. If no subsurface deposits were encountered, and the BLM project manager agrees the site is not eligible for the NRHP or CRHR, data recovery is complete;
13. If subsurface deposits are encountered, test the horizontal limits of the site by excavating additional 1-meter-by-1-meter excavation units in 10-centimeter levels until the unit reaches a depth of 20 centimeters below any anthropogenic materials, using a shovel or hand auger, or other similar technique, at four spots equally spread around the exterior edge of each site, recording the locations of these units on the site map;
14. Sample the encountered features or deposits, using the methods described in the monitoring and discovery plan, record their locations on the site map, retain samples, such as flotation, pollen, and charcoal, for analysis, and retain all artifacts for professionally appropriate laboratory analyses and curation, until data recovery is complete;
15. Present the results of the data recovery in a letter report which shall serve as a preliminary report. Letter reports may address one site, or multiple sites depending on the needs of the CRS. The letter report shall be a concise document the provides description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, a map showing the location of excavation units including topographic contours and the site landforms, and a discussion of the NRHP and CRHR eligibility of each site and the justification for that determination;
16. Update the existing Department of Parks and Recreation (DPR) 523 site form for these sites, including new data on seasonal drainages, site boundaries, location of each individual artifact, the boundaries around individual artifact concentrations, the landform, and the eligibility determination;
17. Present the final results of data recovery at these prehistoric sites in the CRR, as described in CUL-4.

CUL-10 **Data Recovery for Complex Prehistoric Sites.** (Previously PSPP MM CUL-12) The project owner shall ensure the monitoring and discovery plan includes a data recovery plan for the unanticipated discovery of resource type "complex prehistoric sites." The data recovery plan shall include how to proceed if buried deposits are encountered and shall also include the materials analyses and laboratory artifact analyses that will be used. The plan shall also specify in detail the location recordation equipment and methods used and describe any post-processing of the data. Prior to the start of ground disturbance within 30 meters of the site boundaries of

each of these sites, the project owner shall then ensure that the CRS and/or archaeological team members implement the plan, which shall include, but is not limited to, the following tasks:

1. Use location recordation equipment that has the latest technology with submeter accuracy (such as UTM 11 North or California Teale Albers) to add to the original site maps the following features: seasonal drainages, site boundaries, location of each individual artifact, and the boundaries around individual artifact concentrations;
2. Request a qualified, BLM-permitted prehistoric archaeologist and a qualified geoarchaeologist be hired by the project owner to identify the specific landform for each site and its relationship to specific ancient lakeshores of Palen Dry Lake. If a lakeshore is present within 100 meters of the site boundary, include it on the site map;
3. Map any differential distribution of artifacts and suggest an explanation for this distribution;
4. Assess the integrity of the site and state the evidence substantiating that opinion;
5. Collect all artifacts after their locations are marked and submit them for laboratory analysis;
6. Excavate one 1-meter-by-1-meter unit in 10-centimeter levels until three sterile levels are encountered, or until the unit reaches maximum depth of planned impact, placing this unit in the part of the site with the highest artifact density; or, if multiple artifact concentrations were identified, place one 1-meter-by-1-meter excavation unit in the center of each concentration and excavate as just described; retain any artifacts for laboratory analysis;
7. Determine the vertical and horizontal limits of each site by placing test units at four locations equally spread around the surface exterior edge and excavating or probing down to the Holocene basement, using a shovel, hand auger, or similar technique; continue exploration in all directions until the horizontal limits of the site are reached; retain any artifacts for laboratory analysis;
8. Excavate the surface feature or features, using the methods described in the monitoring and discovery plan; record their locations on the site map, retain samples, such as flotation, pollen, and charcoal, for analysis, and retain all artifacts for professionally appropriate laboratory analyses and curation, until data recovery is complete;
9. Notify the BLM project manager by telephone or e-mail that subsurface deposits were or were not encountered and make a recommendation on the site's CRHR eligibility;
10. If no subsurface deposits were encountered, and the BLM archaeologist agrees the site is not eligible for the NRHP or the CRHR, data recovery is complete;

11. If subsurface deposits were found, develop a sampling design for additional data recovery in consultation with the CRS; plans for this contingency shall be described in detail in the monitoring and discovery plan;

12. Present the results of the data recovery in a letter report by the PPA or CRS that shall serve as a preliminary report. Letter reports may address one site, or multiple sites depending on the needs of the CRS. The letter report shall be a concise document that provides description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of excavation units including topographic contours and the site landforms;

13. Update the existing Department of Parks and Recreation (DPR) 523 site form for these sites, including new data on seasonal drainages, site boundaries, location of each individual artifact, the boundaries around individual artifact concentrations, and the landform;

14. Present the final results of data recovery for the complex prehistoric sites in the CRR, as described in CUL-4.

CUL-11 **Data Recovery for Historic-Period Refuse Scatters.** (Previously PSPP MM CUL-13) Prior to the issuance of a Notice to Proceed by BLM, the project owner shall ensure that a recovery plan is included in the monitoring and discovery for the recordation of historic-period refuse scatter sites discovered during construction to determine if these sites can be attributed to the DTC/C-AMA use of the region. The plan shall specify in detail the location recordation equipment and methods to be used and describe any anticipated post processing of the data. The project owner shall then ensure that the CRS and/or archaeological team members implement the plan, which shall include, but is not limited to the following tasks:

1. The project owner shall hire an historical archaeologist with the qualifications described in CUL-3 to supervise the field work.

2. The project owner shall ensure that, prior to beginning the field work, the specialist and crew chief are trained to identify the specific landform for each site; in the identification, analysis and interpretation of the artifacts, environmental modifications, and trash disposal patterns associated with the early phases of WWII land-based U.S. army activities.

3. The project owner shall ensure that, prior to beginning the field work, the field crew members are also trained in the consistent and accurate identification of the full range of late nineteenth and early to mid-twentieth-century can, bottle, and ceramic diagnostic traits.

4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any man-made features, the limits of any artifact concentrations and features, using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).

5. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, documenting the measurements and the types of seams and closures for each bottle, and the measurements, seams, closure, and opening method for all cans. Photographs shall be taken of maker's marks on bottles, any text or designs on bottles and cans, and of decorative patterns and maker's marks on ceramics. Artifacts shall not be collected.
6. The project owner shall ensure that the details of what is found at each site shall be presented in a letter report from the CRS or specialist, which shall serve as a preliminary report, that details what was found at each site, as follows:
   a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and
   b. The letter report shall be a concise document that provides a description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of collection and/or excavation units, including topographic contours and the site landforms.
   c. The letter report shall make a recommendation on whether each site is associated with the DTC/C-AMA use of the region.
7. The project owner shall ensure that the specialist analyzes all recovered data and writes, or supervises the writing of a comprehensive final report. This report shall be included in the CRR (CUL-4).

CUL-12 **Data Recovery for Historic-Period Sites with Features.** (Previously PSPP MM CUL-14) Prior to the issuance of a Notice to Proceed by BLM, the project owner shall ensure that a data recovery plan is included in the monitoring and discovery plan for evaluation and data recovery from historic-period archaeological sites with features discovered during construction. The plan shall specify in detail the location recordation equipment and methods to be used and describe any anticipated post processing of the data. The project owner shall then ensure that the CRS, the specialist, and/or archaeological team members implement the plan, which shall include, but is not limited to the following tasks:

1. The project owner shall hire a historical archaeologist with the qualifications described in CUL-3 to supervise the field work.
2. The project owner shall ensure that, prior to beginning the field work, the specialist and crew chief are trained in the identification, analysis and interpretation of the artifacts, environmental modifications, and trash disposal patterns associated with the early phases of WWII land-based U.S. army activities.
3. The project owner shall ensure that, prior to beginning the field work, the field crew members are also trained in the consistent and accurate identification of the full range of late nineteenth and early to-mid-twentieth-century can, bottle, and ceramic diagnostic traits.

4. The project owner shall ensure that the original site map shall be updated to include at minimum: landform features such as small drainages, any man-made features, the limits of any artifact concentrations and features (previously known and newly found in the metal detector survey), using location recordation equipment that has the latest technology with sub-meter accuracy (such as UTM 11 North or California Teale Albers).
5. The project owner shall ensure that a detailed in-field analysis of all artifacts shall be completed, if not done previously. Types of seams and closures for each bottle and all cans shall be documented. Photographs shall be taken of any text or designs. Unusual or unidentifiable artifacts may be collected for further analysis, but otherwise artifacts shall not be collected.
6. The project owner shall ensure a systematic metal detector survey be completed at each site, and that each "hit" is investigated. All artifacts and features thus found must be mapped, measured, photographed, and fully described in writing.
7. The project owner shall ensure that all features are recorded, and that any features having subsurface elements are excavated by a qualified historical archaeologist. All features and contents must be mapped, measured, photographed, and fully described in writing.
8. The project owner shall ensure that the details of what is found at each site shall be presented in a letter report from the CRS or specialist to the BLM project manager which shall serve as a preliminary report, that details what was found at each site, as follows:
    a. Letter reports may address one site, or multiple sites depending on the needs of the CRS; and
    b. The letter report shall be a concise document that provides a description of the schedule and methods used in the field effort, a preliminary tally of the numbers and types of features and deposits that were found, a discussion of the potential range of error for that tally, and a map showing the location of collection and/or excavation units, including topographic contours and the site landforms.
    c. The letter report shall make a recommendation on whether each site is associated with the DTC/C-AMA use of the region.
9. The project owner shall ensure that the data collected from the field work shall be used in the determination of which, if any, of the historic-period sites are associated with the DTC/C-AMA use of the region.
10. The project owner shall ensure that the specialist analyzes all recovered data and writes or supervises the writing of a comprehensive final report. This report shall be included in the CRR (CUL-4).

CUL-13 **Memorandum of Agreement.** The BLM shall prepare a Memorandum of Agreement (MOA) in consultation with the SHPO, Advisory Council on Historic Preservation (if they elect to participate), Indian tribes, and other interested parties to

govern the resolution of any adverse effects on historic properties (listed on or eligible for the NRHP) that may result from the proposed or alternative actions. The MOA shall be executed prior to BLM's approval of the Record of Decision.

CUL-14 **Update Palen Dry Lake ACEC Management Plan.** In order to address indirect impacts to the Palen Dry Lake ACEC, the project owner shall retain a cultural resources specialists who are qualified to receive a California BLM Cultural Resources Use Permit and BLM Fieldwork Authorization to support BLM in the update of the Palen Dry Lake ACEC Management Plan. Known cultural resources in the ACEC shall be revisited and all DPR 523 forms updated to current standards. Results of the work shall reported in documents that conform to California BLM Cultural Resource Use Permit stipulations regarding reporting. The project owner shall ensure that the details of this agreement are stipulated in the Monitoring and Discovery Plan (Mitigation Measure CUL-3).

CUL-15 **Palen Pass Historic District Recording.** In order to address cumulative impacts to the DTC/C-AMA, the project owner shall retain cultural resources specialists who are qualified to receive a California BLM Cultural Resources Use Permit and BLM Fieldwork Authorization to prepare a desktop inventory and map using aerial photography of WWII-era features in the Palen Pass area. A field visit to record (photography and plan maps) a 5% sample of the features in more detail will also be conducted and a DPR 523 historic district form will be prepared. Results of the work shall reported in documents that conform to California BLM Cultural Resource Use Permit stipulations regarding reporting. The project owner shall ensure that the details of this effort are stipulated in the Monitoring and Discovery Plan (Mitigation Measure CUL-3).

4.4.5 Residual Effects after Implementation of Mitigation Measures

Residual impacts on cultural resources would remain after all 16 mitigation measures are implemented. While no direct impacts to known historic properties are anticipated, direct effects to inadvertently discovered cultural resources, could be damaged or destroyed by project construction, operation, maintenance, and decommissioning, even if subjected to mitigation measures, would be permanently lost. This would make those cultural resources unavailable for future study to address future research needs when more advanced investigative techniques and methods of analysis might be available.

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, Culturally Sensitive Areas Identified in the Project Indirect Effects APE) suggests that the construction and operation of the Proposed Action would not have an indirect impact on places of traditional cultural importance. Government-to-government consultation between BLM and interested tribes is ongoing to confirm that the Palen Dry Lake ACEC is not eligible for the NRHP and CRHR under Criterion A/1 and that the Project would not result in impacts to this area. If identified, residual impacts to these sensitive resources would remain after the implementation of MM CUL-14 (Update Palen Dry Lake ACEC Management

Plan) until the decommissioning of the Project. A return to a non-industrial setting after decommissioning would remove some of the indirect impacts to these sensitive resources but residual impacts would remain.

4.4.6 Unavoidable Adverse Impacts

Direct impacts to known cultural resources eligible for the NRHP or CRHR are not anticipated. However, direct effects of ground disturbance caused by the Project could result in the discovery of currently unknown resources. Unavoidable adverse impacts on these resources could occur through damage, displacement and destruction of sites, features, and artifacts. In addition, inadvertently discovered resources could lose integrity due to their removal from their original locations, which hold their historic or sensitive cultural values, or their destruction.

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, Culturally Sensitive Areas Identified in the Project Indirect Effects APE) suggests that the construction and operation of the Proposed Action would not result in unavoidable adverse impacts on culturally sensitive areas through the introduction of industrial facilities to a rural setting. However, government-to-government consultation between BLM and interested tribes is ongoing to confirm that the Palen Dry Lake ACEC is not eligible for the NRHP and CRHR under Criterion A/1 and that the Project would not result in impacts to the area. If impacts are identified, a return to a non-industrial setting after decommissioning would remove some of the indirect impacts to these sensitive resources but impacts would remain adverse.

4.4.7 CEQA Significance Thresholds and Determinations

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. They are used to determine whether a project or alternatives would result in significant impacts under CEQA related to cultural resources or tribal cultural resources. Under CEQA, the Project would cause a significant impact if it caused a substantial adverse change in the significance of a historical resource, an archeological resource, or a tribal cultural resource as defined under CCR, Title 14, Chapter 3, Section 15064.5. The Project would have a significant impact on these resources if it would:

Cultural Resources Under Appendix G:

CR-1 Cause a substantial adverse change in the significance of a historical resource;

CR-2 Cause a substantial adverse change in the significance of a (unique) archaeological resource;

CR-3 Disturb any human remains, including those interred outside of dedicated cemeteries.

Tribal Cultural Resources Under Appendix G:

TCR-1 Cause a substantial adverse change in the significance of a tribal cultural resource identified through consultation with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project (Public Resources Code Section 21084.2).

TCR-2 Cause a substantial adverse change in the significance of a tribal cultural resource listed in, or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources, and it is demolished or materially altered as described in State CEQA Guidelines section 15064.5 (b).

Under all of these criteria, adverse changes and impacts are the following:

- Physical, visual, or audible disturbances resulting from construction and development that would affect the integrity of a resource or the qualities that make it eligible for the CRHR;
- Exposure of resources to vandalism or unauthorized collecting;
- A substantial increase in the potential for erosion or other natural processes that could affect resources;
- Neglect of a resource that causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to a Native American tribe; or
- Transfer, lease, or sale of a resource out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the resource's historic significance.

CR-1 Cause Adverse Change in Significance of Historical Resource

Under the Proposed Action the direct and indirect impacts of project construction, operation, and decommissioning, to historical resources as described in Section 4.4.2 would be significant under criteria CR 1 (adverse change to significance of historic resources).

One of the 77 resources recorded during cultural resource surveys within the direct effects APE is eligible for the NRHP and CRHR and is therefore considered a historical resource. This resource is located along the transmission line and could be avoided and protected from damage during construction.

Four culturally sensitive areas eligible for the NRHP and CRHR were identified within the indirect APE. The four areas include: the Palen Dry Lake ACEC, the Alligator Rock ACEC, the Corn Springs ACEC, and the Palen-Ford Playa Dunes ACEC. All have been recommended eligible for the NRHP and the CRHR as districts. The BLM disagrees with this recommendation.

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are four APMs relevant to cultural resources (Section 2.2.7, Chapter 2), as listed in Table 4.4-3.

Table 4.4-3. Applicant Proposed Measures for Cultural Resources

APM #	Text	Explanation
APM-21	Identify places of traditional cultural and religious importance to federally recognized Tribes and maintain access to these locations for traditional use.	Identification of traditional cultural and religious places has been incorporated into the Project. Impacts to them will be addressed through MM CUL-13 and CUL-14. However, given the sensitivity of these resources they may not be able to reduce those impacts to less than significant.

Table 4.4-3. Applicant Proposed Measures for Cultural Resources

APM #	Text	Explanation
APM-22	Design activities to minimize impacts on cultural resources including places of traditional cultural and religious importance to federally recognized Tribes.	The Project has incorporated design elements to minimize impacts to cultural resources and places of traditional cultural and religious importance. However, the changes to the rural setting result in impacts that require additional mitigation. Impacts to them will be addressed through MMs CUL-13 and -14. However, given the sensitivity of these resources they may not be able to reduce those impacts to less than significant.
APM-23	Develop partnerships to assist in the training of groups and individuals to participate in site stewardship programs.	Mitigation Measure CUL-14 satisfies this APM, which addresses indirect impacts to places of traditional cultural and religious importance for Tribes. However, given the sensitivity of these resources this measure may not be able to reduce those impacts to less than significant.
APM-24	Promote desert vegetation types/communities by avoiding them where possible, then use required compensatory mitigation, off-site mitigation, and other means to ensure Native American vegetation collection areas and practices are maintained.	Measures such as VEG-8 (Impact Avoidance and Minimization Measures) satisfy this APM. No Native American vegetation collection areas have been identified within the project area, and so no additional mitigation has been proposed.

Fourteen mitigation measures are recommended to reduce the severity of the impacts defined in Sections 4.4.2 and 4.4.3 (the full text of all measures is presented in Section 4.4.4). The following summarizes how each measure would reduce the impacts of the Project to cultural resources:

- CUL-1 identifies the people who would implement all of the mitigation measures,
- CUL-2 specifies the information the project owner would supply to them,
- CUL-3 provides for the preparation and implementation of the monitoring and discovery plan, which would structure and govern the implementation of the broader treatment program.
- CUL-4 establishes report standards for post review discovery situations.
- CUL-5 would provide training of project personnel to identify, protect, and provide appropriate notice about known and new potential cultural resources in the project construction area.
- CUL-6 and MM CUL-7 would provide construction monitoring and cultural resources discovery protocols.
- CUL-8 would protect resources along the transmission line from direct effects through avoidance.
- CUL-9 and MM CUL-10 address direct impacts to prehistoric-period archaeological resources inadvertently discovered during construction.
- CUL-11 and MM CUL-12 address direct impacts to historic-period archaeological resources inadvertently discovered during construction.
- CUL-13 would ensure that an MOA would be developed that would govern the resolution of direct, indirect and cumulative adverse effects on historic properties.
- CUL-14 would address indirect impacts to the Palen Dry Lake ACEC through an update to the Palen Dry Lake ACEC management plan to modern standards.

In addition to implementation of Mitigation Measures CUL-1 through CUL-15 (described in the NEPA analysis of the Proposed Action), Mitigation Measures CUL-16 through CUL-20 would reduce direct, indirect and cumulative impacts to cultural resources and tribal cultural resources if any are identified. CUL-16 through CUL-20 would only be required by Riverside County. These measures relate specifically to the relationship between the County and tribes, and to the treatment of cultural resources and tribal cultural resources under CEQA. Those resources may not be considered historical properties. As such, these measures are not required under NEPA.

CUL-16 **Coordination with Interested Tribes.** Prior to grading permit issuance for construction or decommissioning: If there are any changes to project site design and/or proposed grades, the Applicant shall contact interested tribes to provide an electronic copy of the revised plans for review. Additional consultation shall occur between the County, Applicant and consulting tribes to discuss the proposed changes and to review any new impacts and/or potential avoidance/preservation of the cultural resources on the Project.

CUL-17 **Avoidance, Preservation and Relocation.** The Applicant will make all attempts to avoid and/or preserve in place as many as possible of the cultural resources and tribal cultural resources located on the project site if the site design and/or proposed grades should be revised in consult with the County. In specific circumstances where existing and/or new resources are determined to be unavoidable and/or unable to be preserved in place despite all feasible alternatives, the developer shall make every effort to relocate the resource to a nearby open space or designated location on the property that is not subject any future development, erosion or flooding.

CUL-18 **Archaeological and Native American Tribal Monitoring.** At least 30-days prior to application for a grading permit and before any grading, excavation and/or ground disturbing activities on the site take place, the Project Applicant shall retain a Secretary of Interior Standards qualified archaeological monitor to monitor all ground-disturbing activities in an effort to identify any unknown archaeological resources. Since monitoring would potentially take place on BLM-administered lands, the Project Archaeologist will be required to hold a BLM cultural resource use permit.

1. The Project Archaeologist, in consultation with consulting tribes, the Developer and the County, shall develop an Archaeological Monitoring Plan to address the details, timing and responsibility of all archaeological and cultural activities that will occur on the project site. Details in the Plan shall include:
   a. Project grading and development scheduling;
   b. The development of a rotating or simultaneous schedule in coordination with the applicant and the Project Archeologist for designated Native American Tribal Monitors from the consulting tribes during grading, excavation and ground disturbing activities on the site: including the scheduling, safety requirements, duties, scope of work, and Native American Tribal Monitors'

authority to stop and redirect grading activities in coordination with all Project archaeologists;

c. The protocols and stipulations that the Developer, County, Tribes, and Project archaeologist will follow in the event of inadvertent cultural resources and tribal cultural resources discoveries, including any newly discovered deposits that shall be subject to a resource evaluation; and

d. Archaeological Monitoring Plan shall take into account the potential impacts to undiscovered buried archaeological and cultural resources and procedures to protect in place and/or mitigate such impacts.

CUL-19 **Monitoring Program for Decommissioning.** Prior to Decommissioning Activities the applicant/developer shall provide evidence to the County of Riverside Planning Department that a County certified professional archaeologist (Project Archaeologist) has been contracted to implement a Cultural Resource/Tribal Cultural Resource Monitoring Program. A Cultural Resource Monitoring Plan shall be developed that addresses the details of all activities and provides procedures that must be followed in order to reduce the impacts to cultural and historic resources to a level that is less than significant as well as address potential impacts to undiscovered buried archaeological resources associated with this project. A fully executed copy of the contract and a wet-signed copy of the Monitoring Plan shall be provided to the County Archaeologist to ensure compliance with this condition of approval.

Working directly under the Project Archaeologist, an adequate number of qualified Archaeological Monitors shall be present to ensure that all decommissioning activities are observed and shall be on-site during all decommissioning activities. The frequency and location of inspections will be determined by the Project Archaeologist.

CUL-20 **Native American Tribal Monitoring during Decommissioning.** Prior to Decommissioning Activities the developer/permit applicant shall enter into an agreement(s) with the consulting tribe(s) for Native American monitoring, if necessary, on a simultaneous or rotating schedule based on the scope of work. The Native American Monitor shall be on-site during all decommissioning activities. In conjunction with the Archaeological Monitor, the Native American Monitor shall have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow identification, evaluation, and potential recovery of cultural resources.

The developer/permit applicant shall submit a fully executed copy of the agreement to the County Archaeologist to ensure compliance with this condition of approval. Upon verification, the Archaeologist shall clear this condition. This agreement shall not modify any condition of approval or mitigation measure.

Mitigation Measures CUL-1 through CUL-14 and CUL-16 through CUL-20 would reduce the impacts to historical resources and tribal cultural resources (those eligible for the CRHR) if any are identified, by putting procedures in place for their management and treatment.

Direct impacts to one historic-era historical resource along the proposed gen-tie (CA-RIV-9869) would also be avoided by Mitigation Measure CUL-8 (Flag and Avoid) and MM CUL-17 (Avoidance, Preservation and Relocation), which would protect the resource from destruction through avoidance. These mitigation measures will reduce project impacts to CA-RIV-9869 to less than significant levels.

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, Culturally Sensitive Areas Identified in the Project Indirect Effects APE) suggests that the Proposed Action would not result in indirect impacts to the Palen Dry Lake ACEC. If impacts are identified through AB 52 consultation between the County and tribes, the severity of impacts would be reduced through implementation of MM CUL-14 (Update Palen Dry Lake ACEC Management Plan), which would update the management plan to modern standards. MM CUL-13 (Memorandum of Agreement) would ensure that an MOA would be developed that would govern the resolution of direct, indirect and cumulative adverse effects on historic properties and historical resources if any are identified (the full text of all measures is presented in Section 4.4.4). However, while the mitigation measures would reduce the severity of impacts, there remains the potential for impacts to be significant and unmitigable.

Both the Reduced Footprint Alternative and the Avoidance Alternative would result in direct impacts to CA-RIV-9481, the DTC/C-AMA associated 18th Ordinance Battalion Campsite. These impacts would be addressed by MM CUL-8 (Flag and Avoid) which would protect the resource from destruction through avoidance. The direct impacts of both alternatives would be the less than that of the Proposed Action due to their smaller disturbance areas. As with the Proposed Action, important resources that are not now known may be identified through ongoing tribal consultation or during construction. If the loss of these resources cannot be fully mitigated, the impacts would be significant and unmitigable.

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, Culturally Sensitive Areas Identified in the Project Indirect Effects APE) suggests that neither alternative would result in indirect impacts to historical resources. As with the Proposed Action, if indirect impacts to these resources are confirmed through AB 52 consultation between the County and tribes, they would be addressed by MM CUL-14 (Update Palen Dry Lake ACEC Management Plan) which would update the management plan to modern standards. The indirect impacts of both alternatives would be the same as the Proposed Action.

Under the No Action Alternative, the solar project would not be constructed so there would be no impact to historical resources. Other projects or linear facilities could potentially be developed at this location, because it is located in the Riverside East Solar Energy Zone (SEZ) of BLM's Western Solar Plan and is land designated as a Development Focus Area (DFA, but they would be evaluated under separate CEQA and/or NEPA analyses).

CR-2 Cause Adverse Change in Significance of an Archaeological Resource

Under the Proposed Action, the Reduced Footprint Alternative, and Avoidance Alternative, the direct and indirect impacts of project construction, operation, and decommissioning, to unique archaeological resources as described in Section 4.4.2 could create significant impacts under criterion CR 2 (adverse change to significance of archaeological resources). However, they are not

anticipated because no unique archaeological resources have been identified to date. If important archeological resources are found during construction, implementation of MM CUL-1 through MM CUL-15 and MM CUL-16 through MM CUL-20 would reduce some of these impacts to less than significant levels. However, because the severity of the residual impact would depend on the value of each resource found and the extent of its destruction during construction, the impact may remain significant even with all mitigation implemented.

Significant direct physical impacts to unique archaeological resources often result in the complete destruction of the resource. Mitigation of some of these impacts involves the collection of information or "data recovery." This analysis and interpretation of the data collected through archaeology teaches us about the lives of historic people. The knowledge gained about American history enriches the lives of the general public. Therefore, although an important resource is lost forever, some of the information about that resource is retained. While mitigation measures can reduce many individual site impacts to less than significant levels, archaeological excavation and analysis cannot recover all the scientific values of a site. As a result, the impact overall may remain significant.

Under the No Action Alternative the Proposed Action and other alternatives would not be constructed so there would be no adverse change in significance of an archaeological resources. Other projects or linear facilities could potentially be developed at this location, because it is located in the Riverside East Solar Energy Zone (SEZ) of BLM's Western Solar Plan and is land designated as a Development Focus Area (DFA, but they would be evaluated under separate CEQA and/or NEPA analyses).

CR-3 Disturb Human Remains

Under the Proposed Action, the Reduced Footprint Alternative, and the Avoidance Alternative, the direct and indirect impacts of project construction, operation, and decommissioning, to human remains as described in Section 4.4.2 could create significant impacts under criteria CR-3 (disturbance of human remains). However, they are not anticipated because no human remains have been found in the project area. If human remains are discovered during construction, depending on the cultural and religious background of the individual human remains discovered, the implementation of MM CUL-1 through MM CUL-15 and MM CUL-16 through MM CUL-20 may reduce some of these impacts to less than significant levels. However, the remains of Native Americans are the most likely to be discovered within or nearby the project area. Tribal consultation indicates that both direct and indirect impacts to Native American remains would be partially addressed by MM CUL-1 through MM CUL-15 and MM CUL-16 through MM CUL-20. However, if remains are found, these measures would not reduce impacts to less than significant levels; the impacts would remain significant.

Under the No Action Alternative the Proposed Action and other alternatives would not be constructed and there would be no impact to human remains.

TCR-1 Cause Adverse Change in the Significance of a Tribal Cultural Resource Identified Through Tribal Consultation

Under the Proposed Action, the Reduced Footprint Alternative, and Avoidance Alternative, the direct and indirect impacts of project construction, operation, and decommissioning, to tribal cultural

resources as described in Section 4.4.2 could create significant impacts under criterion TCR-1 (adverse change in the significance of a tribal cultural resources identified through tribal consultation). However, they are not anticipated because no tribal cultural resources have been have been identified through tribal consultation. The implementation of MM CUL-1 through MM CUL--15 and MM CUL-16 through MM CUL-20 would reduce some of these impacts to less than significant levels. If important resources are identified through ongoing consultation or as a result of discoveries during construction, some of the impacts may remain significant.

Under the No Action Alternative, the Proposed Action and other alternatives would not be constructed and there would be no impact to tribal cultural resources.

TCR-2 Cause Adverse Change in the Significance of a Tribal Cultural Resource Eligible for or Listed on the CRHR

Under the Proposed Action, the Reduced Footprint Alternative, and Avoidance Alternative, the direct and indirect impacts of project construction, operation, and decommissioning, to tribal cultural resources as described in Section 4.4.2 could create significant impacts under criterion TCR-2 (adverse change in the significance of a tribal cultural resources eligible or listed on the CRHR). However, they are not anticipated because no tribal cultural resources that are eligible or listed on the CRHR have been identified. The implementation of MM CUL-1 through MM CUL-15 and MM CUL-16 through MM CUL-20 would reduce some of these impacts to less than significant levels. However, if important resources are identified through ongoing consultation or as a result of discoveries during construction, some impacts may remain significant and unmitigable.

Under the No Action Alternative, the Proposed Action and other alternatives would not be constructed and there would be no impact to tribal cultural resources.

Cumulative Impacts Under CEQA

As described in Section 4.4.3, the effects of Alternatives 1 and 2 and the Proposed Action, when combined with impacts from past, present, and reasonably foreseeable projects, contribute in a small but significant way to the cumulatively considerable adverse impacts for cultural resources in eastern Riverside County. As summarized in Table 4.4-1, direct impacts associated the Project would contribute approximately 3 percent of the cumulative impacts within the cumulative analysis study area in eastern Riverside County.

A total of 77 cultural resources are present within the direct APE of the Proposed Action. One of these resources are eligible for the NRHP and CRHR. Twenty-three of the 77 resources are WWII-era historic resources associated with the DTC/C-AMA. While these resources are not eligible for listing on the NRHP and CRHR, their destruction as a result of the Project contributes in a small but measureable way to the destruction of the DTC/C-AMA as a whole. Cumulative impacts to the DTC/C-AMA would be addressed through MM CUL-15 (Palen Pass Historic District Recording).

Information currently available from recent ethnographic interviews and tribal consultation associated with other projects (see Section 3.4.2.8, Culturally Sensitive Areas Identified in the Project Indirect Effects) suggests that the Project would not affect historic properties so would not contribute to significant cumulative indirect impact on historic properties. However, if indirect impacts

to these resources are identified through AB 52 continued consultation between the County and with the tribes, the Project could contribute to significant cumulative impacts to the Palen Dry Lake ACEC. This would combine with the indirect effects of the cumulative projects, especially the solar and transmission projects. Indirect effects of the cumulative projects, such as the nearby solar projects, could be associated with a visual intrusion into the historic setting of the Palen Dry Lake ACEC. MM CUL-14 (Update Palen Dry Lake ACEC Management Plan) would reduce the contribution of the project but the cumulative impact would remain significant.

4.5 Environmental Justice

4.5.1 Impact Assessment Methodology

This analysis of whether construction, operation and maintenance, and closure and decommissioning of the Project would cause a disproportionate impact on low-income and/or minority populations within the potentially affected area relies on a demographic screening analysis to first determine whether there are environmental justice communities of concern that could be potentially impacted by the Project. For the purposes of this study, the primary area where adverse effects from the Project may occur would be within a 6-mile radius of the site. Beyond that distance, most direct physical effects of the Project would typically be expected to be relatively diminished and residents' daily interaction with the Project would likely be relatively limited.

It is noteworthy that communities surrounding the project site represent populations that live far outside a 6-mile radius of the site, the distance where most environmental impacts of the Project would occur. The estimated total residential population within a 6-mile radius of the site is estimated to be 17 people. Because there is little population within a 6-mile radius and some effects would extend beyond this radius, the environmental justice study area defined in Section 3.5 (demographic data shown in Table 3.15-1) includes the City of Blythe (30 miles east of the site) and the community of Desert Center (located 10 miles west of the site). These areas contain the greatest population nearest the Project site. Therefore, the potential for environmental justice impacts to occur outside a 6-mile radius is also discussed (noting that most resource area assessments within this EIS are limited to discussing effects within the 6-mile radius of the site).

The environmental justice reviews the resource specific analyses to identify adverse health and environmental effects that would potentially impact the identified communities of concern. In accordance with CEQ Guidance, the review evaluates the resource impacts to determine if there are "significant (as defined by NEPA) and are or may be having an adverse impact" to a minority or low-income population.

Finally, any such identified significant (as defined by NEPA) impacts were then examined to determine whether the Project's impacts are disproportionately borne by the communities of concern or are distributed more widely and evenly amongst the local and regional population. In the absence of a high and adverse resource impact, no disproportionately high or adverse impact to a community of concern (i.e., environmental justice impact) would occur.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Because environmental justice considers all potential effects to communities of concern, all mitigation measures presented in the Supplemental EIS/EIR are relevant to this resource as they would reduce the overall effects of the Proposed Action.

Applicant Proposed Measures (APMs) are presented in Section 2, Section 2.2.7. None of the APMs are specific to environmental justice but all are relevant to environmental justice as they would reduce the overall effects of the Proposed Action.

4.5.2 Direct and Indirect Effects

As discussed in Section 3.5, Table 3.5-1, Desert Center does not contain a minority population greater than 50 percent. However, all planning areas around the project site (nearby City of Blythe and Riverside County as a whole) contain minority populations exceeding 50 percent of the total population. The community of Desert Center has 33.2 percent of the population identified as living below the poverty level. Because this population meets the definition of a meaningfully greater low-income population than Riverside County, the community of Desert Center is considered an area containing low-income population of concern for the purposes of this analysis.

Proposed Action: Direct Effects

Types of environmental effects caused by the Proposed Action include the loss of public lands for development of the project, as well as the construction and operation of the proposed solar installation that could disproportionately affect disadvantaged populations are discussed below.

Loss of Public Lands

As discussed in Section 3.12 (Recreation), primary activities observed on the Proposed Action site by BLM staff include OHV touring and sightseeing, photography, rockhounding, hiking, and hunting. Camping and backpacking are not common. There are no recreation facilities or specific recreational attractions on the site. The BLM has no visitor counts for the site, but visitor use is understood to be low due to the limited availability and accessibility of recreation opportunities in the immediate area. Most use is by local residents from Desert Center and Blythe, or visitors stopping for short periods while traveling along I-10. Both the community of Desert Center and the City of Blythe are within the environmental justice study area for the Project, with racial and income characteristics presented in Section 3.15, Table 3.15-1. Due to the transient nature of persons travelling along I-10, a major interstate highway travelling through Southern California and central Arizona, it is not possible to determine the racial or income characteristics of motorists that may stop and use the project site for recreational.

As discussed in Sections 3.4 and 4.4 (Cultural Resources), Tribal cultural resources (TCRs) are a newly defined class of resources under state law. TCRs include sites, features, places, cultural landscapes, and sacred places or objects that have cultural value or significance to a Tribe. Native American tribes that are traditionally and culturally affiliated with a geographic area can provide lead agencies with expert knowledge of TCRs. While no known TCRs have been identified within the project site, Native Americans have consistently placed a high value on the entire Project landscape. However, the overall likelihood of encountering buried cultural deposits within the project area is low. Section 4.5 identifies measures to protect unknown buried TCRs should they be encountered during Project construction.

While the Project would permanently disturb 3,381 acres, the adverse impact to the landscape is not considered to create a disproportionate effect on Native Americans due to the large amount of undisturbed land in the project area and the proximity of the project site to I-10 (a major interstate highway that greatly affects the landscape of the site area) and the adjacent transmission corridor. However, the elimination of approximately 4,200 acres for public access (including

tribal access) and the alteration of the site from its natural state is considered an unavoidable impact of the Project. This impact would not be disproportionate to Native Americans as it would affect all members of the public.

Construction Impacts

Construction of the Palen Solar Project would require use of large machinery and require ground disturbing activities over a period of 30 months. Many of the typical impacts during construction of a large scale solar project could result in nuisances. These impacts do not typically result in unavoidable disproportionate impacts to disadvantaged communities because they can be managed through best management practices and mitigation of the Proposed Action. Expected temporary construction-related impacts include:

- **Air Quality:** The typical air quality impacts from construction and decommissioning activities for a solar PV project result from fugitive dust from grading, vehicles driving on unpaved surfaces or roadways, and emissions from heavy-duty construction equipment and vehicles carrying construction materials and workers. These emissions occur during site development and preparation, transmission line development, and from building and roadway construction.

  Construction activities include mobilization, land clearing, earth moving, road construction, ground excavation, drilling, foundation construction, and installation activities. These activities and equipment use would temporarily increase the amounts of particulate matter and precursors to PM10 and PM2.5, pollutants for which the air basin is in nonattainment. Similarly, increased amounts of ozone precursors (volatile organic compounds [VOCs] and nitrogen oxides [NOx]) would occur from engine exhaust emissions, further exacerbating ozone nonattainment conditions.

  Air quality impact findings are based on the type, quantity and the spatial relationship of Project pollutant emissions. The pollutant emissions associated with activities occurring under the Proposed Action would be spread across all population within the 6-mile radius (emissions from the project site) and beyond (along the major transportation routes). The greatest concentrations of air pollutants would be closest to the emissions sources, with those concentrations reducing as they are dispersed. Given the distance of the City of Blythe to the project site (30 miles east of the site), the community of Desert Center (located 10 miles west of the site) has the greatest potential to be affected by temporary air quality emissions. As noted in Table 3.15-1, the Desert Center CDP was not found to contain high concentrations of minority or low-income persons that could be disproportionately affected. Additionally, at this distance, most emissions would disperse and would not disproportionately affect any population.

- **Noise:** Temporary construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g., land clearing, grading and excavation, solar module erection). Construction noise in any one particular area would be temporary and short-term and would include noise from site preparation, trucks hauling material, concrete pouring, and power tools. Construction equipment, including earthmovers, material handlers, and portable generators would also generate noise and could reach high levels for brief periods, with such noise levels being localized within the site. Given the distance of the City of Blythe to the project site (30 miles east of the site) and the community of Desert Center (located 10 miles

west of the site), noise generated within the project site would attenuate to non-discernable levels by this population and would not disproportionately affect any population.

- **Social conditions:** Construction would result in the temporary in-migration of workers (and possibly their families) into communities proximate to project (including rural areas), which could temporarily affect housing availability and disrupt existing social conditions. Given the need of workers for housing, food, and other amenities, both the City of Blythe and community of Desert Center would likely be affected. As shown in Table 3.15-1, Desert Center does not contain a minority population greater than 50 percent; however, the City of Blythe contains a minority population of 72 percent. Additionally, the community of Desert Center is found to be a low-income area of concern. However, while these communities contain environmental justice populations, the entire community would likely be temporarily affected by the temporary influx of workers during construction, which may produce both adverse and beneficial effects.
- **Traffic:** During construction, the movement of persons, equipment, and materials to project sites during construction could cause a temporary decrease in the performance levels on local primary and secondary road networks. Oversized or overweight loads, as well as large truck ingress/egress to work areas, may result in temporary road closures or roadway hazards. Given the distance of the City of Blythe to the project site (30 miles east of the site) and the community of Desert Center (located 10 miles west of the site), localized traffic impacts generated near the project site would not disproportionately affect any population.

Operational Impacts

- **Aesthetics:** The operation and maintenance of the Proposed Action and associated electricity transmission lines, roads, and rights-of-way would have long-term adverse visual effects due to visual intrusion of facilities introduced into currently undisturbed landscapes. While most viewers of the site would be motorists on I-10, the Project would result in visual contrast to the rural area. Additionally, under certain viewing conditions, the solar installation could result in specular reflections (glint and glare) visible to motorists. Given the distance of the City of Blythe to the project site (30 miles east of the site) and the community of Desert Center (located 10 miles west of the site), residents within these communities would not have direct views of the Project. Therefore, the affected population are primarily motorists on I-10 and recreationists using adjacent lands.

  Due to the transient nature of persons travelling along I-10, there is no feasible way to determine the racial or income characteristics of motorists that may be affected from adverse visual effects or those that stop and use the project site for recreational use under current conditions. With respect to local residents that may utilize adjacent lands for recreational purposes, the entire community of Desert Center and City of Blythe are considered to be affected by adverse visual effects from nearby viewsheds. No population within the study area would be disproportionately affected, instead the entire study area is considered affected equally.
- **Public Access:** The development of the Project would result in long-term impacts by limiting off-highway vehicle (OHV) and public access of and through the site. The project site currently contains approximately 14 miles of BLM-designated open routes that would be closed to OHV use during construction and operations. While elimination of these routes would impact the ability of OHVs to travel in and through the site, users could detour onto other routes and/or

open washes to access the same locations. Operation of the Project would result in closure of the navigable Primary and Secondary washes that transverse the site to OHV users and recreationists. However, users could detour onto other routes and/or open washes in the area.

- Due to the transient nature of persons travelling along I-10, there is no feasible way to determine the racial or income characteristics of motorists that may stop and use the project site for recreational use under current conditions. With respect to local residents that may utilize adjacent lands for recreational purposes, the entire community of Desert Center and City of Blythe are considered to be affected by loss of public lands and loss of public access to the site. No population within the study area would be disproportionately affected, instead the entire study area is considered affected equally.

Beneficial Impacts

Beneficial economic and tax base impacts would occur during construction of the Palen Solar Project from expenditures on worker wages and salaries, as well as from procurement of goods and services required for project construction and sales taxes generated from goods and services purchased by workers. Similar beneficial economic and tax base impacts would occur during facility operations from expenditures on wages and salaries, procurement of local goods and services, and the collection of sales and income taxes. The nearby communities of Desert Center and the City of Blythe are expected to realize these benefits.

Environmental Justice Impacts

Based on the impact summary above, the environmental justice review determined that construction, operation and maintenance, and closure of the project site to the public would not result in disproportionate effects to environmental justice population for any of the specified resource areas. While some temporary and permanent adverse impacts associated with the Proposed Action could occur to minority or low-income persons, these persons are not considered to disproportionately burden these impacts, instead the impacts would be borne by the entire community. This determination includes the consideration of proposed mitigation measures and the absence of significant numbers of minority or low-income population within a 6-mile radius of the site (the distance at which most environmental effects would occur). Moreover, no significant and adverse public health and safety impacts are anticipated associated with the Proposed Action. For these reasons, and considering the rural and remote character of the area and the low population near the site, the Project would not result in any disproportionate adverse impacts on low-income or minority populations. Therefore, no impacts to low-income, minority, or Tribal populations would be associated with the Proposed Action.

Proposed Action: Indirect Effects

The expected beneficial socioeconomic impacts discussed above could be considered as indirect effects of the Proposed Action. Furthermore, because implementation of the Project would result in the removal of open OHV routes and washes within the site, this could result in minor increases in recreation use at other routes and open areas in the project area.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would be constructed within the same project boundary as the Proposed Action but would eliminate use of the central desert wash that crosses the project site from southwest to northeast. The alternative would remain a 500 MW project identical to the Proposed Action, but would divide the Project into two separate solar fields within the site boundary. While it would reduce potential impacts to the wash area compared to the Proposed Action, the effects on minority and low-income population within a 6-mile radius and nearby communities of the site would remain substantially the same. Therefore, given the low population (estimated 17 persons) within a 6-mile radius of the site, this alternative is not expected to result in adverse disproportionate impacts to minority or low-income persons.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would be constructed within the same project boundary as the Proposed Action but would be built on less than 50 percent of the Proposed Action site because it would eliminate the desert dry wash woodland and areas within the Mojave fringe-toed lizard suitable habitat. The Avoidance Alternative is estimated to develop an approximately 200 MW project. The Avoidance Alternative would result in approximately half of the construction and operational effects of the Proposed Action (as the total project being built is roughly half that of the Proposed Action). Because the project site is in the same location but smaller, the minority and low-income population within a 6-mile radius and nearby communities of the site would remain the same as those of the Proposed Action. Therefore, given the low population (estimated 17 persons or less due to reduced project footprint) within a 6-mile radius of the site (expected distance where most adverse impacts would occur), this alternative is not expected to result in unavoidable adverse disproportionate impacts to minority or low-income persons. It would be expected to result in a reduction in overall adverse effects to minority or low-income persons when compared to the Proposed Action due to the smaller size of the Project. By reducing the overall Project site, temporary construction impacts would be reduced, the visual impact of the solar installation would be incrementally reduced, and the amount of land removed from public access would be reduced by 50 percent. It should also be noted that a reduction of the Project at this scale would also reduce the beneficial economic effects (see Section 4.13).

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the CDCA Plan, as amended by the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.5.3 Cumulative Effects

Geographic Scope

The geographic extent of cumulative analysis for environmental justice is defined by the area potentially affected by the Proposed Action, which consists of a 6-mile radius of the site. Beyond that distance, most direct physical effects of the Project would typically be expected to be relatively diminished and residents' daily interaction with the Project would likely be relatively limited. Within this radius is the community of Desert Center, which represents ZIP Code 92239.

The current and reasonably foreseeable projects identified within the geographic extent include other proposed or approved projects such as BLM-authorized actions or activities, proposed or approved projects within areas under the jurisdiction of Riverside County or other federal lead agencies, and other actions or activities that the lead agencies consider reasonably foreseeable. They are:

- SCE Red Bluff Substation
- Devers-Palo Verde 2 Transmission Line
- Blythe Energy Project Transmission Line
- Desert Southwest Transmission Line
- DC 50 Solar Project
- SunEdison Jupiter Project
- First Solar Development LLC
- SunPower Project
- Plot Plan No. 23577, Revised Permit No 2

Many of these projects and planning actions have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so. Even if environmental review has not been completed for the foreseeable projects, their effects were considered in the cumulative impacts analyses in this Supplemental EIS/EIR, as appropriate.

Reasonably foreseeable projects in the area, including but not limited to those listed, are consistent with past and ongoing development and growth of renewable energy projects within Riverside County and would have similar environmental justice effects. The potential for the Proposed Action to contribute to a cumulative environmental justice impact is discussed below.

Cumulative Impact Analysis

Minority Populations

As described in Section 3.5 and shown in Table 3.5-1, Desert Center does not contain a minority population greater than 50 percent or significantly greater than the larger geography in which it is located (Riverside County) or other adjacent community (City of Blythe). Therefore, the

Proposed Action would not contribute toward disproportionate cumulative effects on minority populations.

Low-Income Population

The geographic extent of the Proposed Action includes a percentage of low-income population greater than the larger geography in which it is located (Riverside County) or the nearest adjacent community (City of Blythe). Therefore, the community of Desert Center is considered an environmental justice area of concern with respect to potential disproportionate impacts to low-income populations. As described in Section 3.5, very few persons are located within the geographic extent (208 persons), with an estimated low-income population of 69 persons.

The projects listed above would be constructed within the area identified as a low-income area of concern. These projects could contribute to a disproportionate environmental justice impact. While construction is limited in duration, many of the typical impacts from construction could result in nuisances. These impacts do not typically result in unavoidable disproportionate impacts to disadvantaged communities because they can be managed through best management practices and mitigation. Once operational, the Proposed Action and projects listed above within the geographic extent are likely to result in adverse visual impacts and loss of public access. These impacts could disproportionately affect low-income populations within Desert Center, therefore the Project would make a contribution to a cumulative impact on a low-income area of concern. It should also be noted that the cumulative development of renewable energy and electrical transmission projects in the area may further negative social values of some residents toward renewable energy facilities. Comments have been received on other renewable energy projects and planning efforts in the California desert stating that rural areas are subjected to adverse effects of such facilities while the generated power is primarily used by distant urban areas.

Beneficial economic and tax base impacts would occur during construction of the Proposed Action and projects listed above within the geographic extent from expenditures on worker wages and salaries, as well as from procurement of goods and services required for project construction and sales taxes generated from goods and services purchased by workers. Similar beneficial economic and tax base impacts would occur during facility operations from expenditures on wages and salaries, procurement of local goods and services, and the collection of sales and income taxes. The residents of Desert Center are expected to realize a portion of these benefits from all projects within the geographic extent.

4.5.4 Mitigation Measures

All recommended mitigation measures and Applicant Proposed Measures (see Section 2.2.7, Section 2, Project Description) included for the Proposed Action and Alternatives would reduce potential adverse impacts. Many such adverse impacts could affect minority or low-income persons. Therefore, while all mitigation measures would reduce potential impacts, no specific environmental justice mitigation measures are proposed. Currently, no specific mitigation is proposed for potential environmental justice effects. Public outreach and solicitation of comments from the adjacent communities of Desert Center, City of Blythe, and tribes (under tribal consultation and Section 106 Compliance) has been requested on the content of this Draft

SEIS (refer to Section 5, Consultation and Coordination). Comments and input during outreach efforts may lead to specific mitigation being proposed in the Final SEIS.

4.5.5 Residual Effects after Implementation of Mitigation Measures

With the implementation of all proposed mitigation measures, the Proposed Action would have no residual impacts to low-income, minority, or Tribal populations.

4.5.6 Unavoidable Adverse Impacts

The Proposed Action would have no unavoidable adverse disproportionate impacts to minority or low-income persons.

4.5.7 CEQA Significance Thresholds and Determinations

CEQA does not provide specific guidance or thresholds for determining the level of significance of environmental justice impacts within Appendix G. Therefore, no significance determination has been made.

4.6 Lands and Realty

This section describes and evaluates the effects related to lands and realty of the Palen Solar Project (Proposed Action), the No Action Alternative, and other alternatives.

This analysis incorporates the lands and realty analysis from the 2011 PA/FEIS and 2010 RSA, Section 4.6.1. However, it modifies the analysis to account for the updated environmental baseline and the PV technology.

4.6.1 Impact Assessment Methodology

The effects of the Project on the lands and realty were assessed based on whether the construction, operation, or decommissioning would directly or indirectly impact rights-of-way (ROWs) and land use permits relative to established Federal, State, or local corridor designations and solar study areas.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Any applicable mitigation measures are referenced by title and number in the discussion of effects (Section 4.6.2). Because no mitigation measures are recommended, none are presented in Section 4.6.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. None of the APMs are relevant to lands and realty.

4.6.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The Project would consist of a 500 MW solar photovoltaic facility that would be located within a right-of-way of approximately 4,200 acres of public land administered by the BLM, with 3,881 acres of proposed ground disturbance. The project site was formally designated as Multiple Use Class (MUC) M (Moderate Use) by the CDCA Plan, As Amended (1980). In 2016, the DRECP Record of Decision removed this classification from the project area and designated the area as a Development Focus Area (DFA), an area on which activities related to solar, wind, and geothermal development, operation, and decommissioning can occur. Because the Proposed Action is an eligible pending application at the time of the DRECP ROD, it is not subject to the DRECP, which amended the CDCA Plan, and this analysis considers the site as MUC M. In addition, a 230-kilovolt (kV) generation interconnection line (gen-tie line), and an operations and maintenance facility are also proposed for construction and operation at the project site. The gen-tie line would interconnect with the power grid at Southern California Edison's (SCE) Red Bluff Substation (EDF RE, 2016).

Proposed Action: Direct Effects

As with the respective solar trough and solar power tower technologies of the PSPP and the PSEGS, construction activities associated with the Proposed Action will directly impact the availability of land at the project site for the placement of future projects or linear facilities. Any future linear projects would be constructed around the outermost perimeter of the Project rather than spanning it. Moreover, future projects would have to be located south of Interstate-10 due to the reduction in developable land north of I-10 at the project site after the completion of the Proposed Action. Unlike with the PSPP solar trough technology, no private land would be occupied by this project and there would be no direct impacts to private lands. No zone permits attributed to private lands are required for this Project.

Potential effects to the designated corridors could occur as a result of the overhead gen-tie transmission line crossing all or portions of the designated corridors. I-10 lies within a corridor identified as "Corridor 30-52, 2 miles in width" that overlies locally designated Corridor K (2 miles in width). These corridors lie south of the proposed gen-tie line on a generally east-west heading. Numerous other linear ROWs lie within and to the north and south of these two designated overlapping corridors. However, with current technology, the potential impacts would be expected to be minimal, easily mitigated and would not preclude continued and future use of either designated corridor. Future use of the corridors would be slightly constrained by placement of additional facilities within, and following along the path of, the corridors (BLM, 2011).

The largest impact to the designated corridors would come from the Palen Solar Project. As shown in Figure 3.6-1 (Proposed Action and Designated Utility Corridors), the CDCA designated corridor also is designated as a West-Wide Energy Corridor under Section 368 of the Energy Policy Act of 2005. The BLM, U.S. Forest Service, and Department of Energy are in the process of reviewing designated Section 368 energy corridors in Region 1, including southern California and Corridor 30-52. The agencies are in the process of addressing the recommendations provided by stakeholders and plan to provide preliminary corridor recommendations during the second half of 2017, followed by stakeholder outreach. These preliminary recommendations would help inform the anticipated future use of this corridor and the anticipated width needed to ensure sufficient space for system integrity and flexibility.

Once constructed, the area encompassed by the Project within the utility corridor, an estimated 420 acres, would not be available for placement of future site or linear facilities. Any future use would have to be constructed around the outermost perimeter of the Project rather than spanning across it. Given that both corridors are 2 miles wide, with I-10 being the approximate center line of both, virtually all of the north half of both corridors would be rendered unusable for future site and linear projects at this location. However, the land south of the project site and south of both corridors is vacant desert land. The land may be potentially available for expanding the width of the corridors to the south along this segment if the BLM decided to consider such expansion through an amendment to the CDCA Plan.

A portion of the utility corridor south of I-10 passes through the northern edge of the Chuckwalla ACEC. The ACEC description provided in the DRECP (DRECP LUPA, Appendix B), states:

- Land use authorization proposals (new, renewal, and amendment) will be analyzed on a case-by-case basis to assess whether they are compatible with the ACEC and its management goals.

- Within the designated Utility Corridor, land use authorizations which preclude the use of the corridor for its intended purposes should be avoided (i.e., priority will be placed on land use authorizations that are consistent with the purposes of the Utility Corridor).

Impacts from the access road exiting the frontage road and heading east to the project site would be minimal because future transmission lines, both gas and electric, could easily bore under or span across the road, respectively. Future use of the corridors would be slightly constrained by placement of additional linear facilities within the corridors.

Any existing authorized use that would be affected by the Proposed Action has "priority rights" in the sense that any new authorization(s) would be issued "subject to" the previously existing ROWs or other uses. Therefore, the Applicant would be required to mitigate any potential impacts to the existing authorized users at the Applicant's expense. This would mean bearing all costs for relocating or modifying any facilities such as power poles or conductor that might be necessary to accommodate the new use. The Proposed Action would accommodate the preexisting Southern California Edison (SCE) Eagle Mountain–Blythe 161 kV transmission line through the Project avoiding conflicts with this existing ROW.

Proposed Action: Indirect Effects

Potential impacts to I-10 from the overhead gen-tie line and telecommunications cable, would be mitigated by following requirements of the Federal Highway Administration (FHWA) and/or California Department of Transportation (Caltrans), and industry standards (SOPs) and best management practices (BMPs) for aerial crossings of federal highways.

Potential impacts from the new access road that would exit Corn Springs Road and head east to the project boundary and the emergency access road abutting the northern edge of the I-10 ROW boundary and extending into the project site would be mitigated by following requirements of the FHWA, Caltrans, and industry SOPs and BMPs for encroachment of federal/state highways.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative to the Proposed Action would eliminate use of the central desert wash that crosses the project site from southwest to northeast, dividing the Project into two solar fields. The effects of this alternative would be substantially similar to those described for the Proposed Action. However, the permanent disturbance area of 3,100 acres is less than the 4,200 acres proposed by the Proposed Action. Additionally, the Reduced Footprint Alternative would overlap with an estimated 375 acres of the Section 368 corridor. Despite the decrease in project acreage, the unused lands would not result in an increase in land available for the placement of future projects or linear facilities since this development would not be permitted to occur on this wash; therefore, the final impacts of this Reduced Footprint Alternative remain the same as those for the Proposed Action.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative to the Proposed Action would limit developable land in accordance with the DRECP Conservation Management Actions (CMAs). The effects of this alternative would be similar to those described for the Proposed Action. However, the resulting area avail-

able for project development would be reduced to 1,620 acres, which is less than the Proposed Action. Although the Avoidance Alterative would reduce the footprint of the solar PV project, it would not increase the land available for the placement of future projects or linear facilities since adherence to the DRECP CMAs would prevent development from occurring in these areas except for allowable minor incursions. The Avoidance Alternative would overlap with an estimated 260 acres of the Section 368 corridor.

No Action Alternative

A denial of the ROW application CACA-48810 would result in the No Action Alternative since a ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.6.3 Cumulative Effects

Geographic Scope

Figure 4.1-1 (in Section 4.1) illustrates the locations and boundaries of proposed projects in the vicinity of the Palen Solar Project. The geographic extent for the consideration of cumulative effects to lands and realty is the same area shown on this map: eastern Riverside County. The area includes all the projects described in Section 4.1.4 (Cumulative Impact Scenario) Tables 4.1-1 and 4.1-2. An analysis of potential cumulative effects to land use covers a large area because current applications for development of renewable energy projects and other facilities could convert a very large acreage of undeveloped public and private land. Large scale energy projects in the vicinity of the PSP include DC 50 Solar Project and potentially 4 other solar leases or rights-of-way east of Highway 177 and west of the Palen Solar Project

Cumulative Effects Analysis

Development in the eastern Riverside County area has increased human use of land in the project area. However, because of the limited availability of water, residential development in the project area has been limited to small developments and various isolated communities, scattered among large tracts of undeveloped land. The construction of multiple projects within the same area could create a substantial adverse cumulative effect to surrounding land and realty uses if the projects were built on or adjacent to areas with planned land and realty uses or with existing easements of ROW. No land and realty uses are planned for the project site and the Proposed Action and alternatives would accommodate the existing ROW.

The Proposed Action would occupy a 4,200 acre right-of-way (within 3,881 acres of fencing), or approximately 2.8 percent of the land designated as Development Focus Areas (DFAs) in the DRECP LUPA in the Colorado Desert Subregion. Existing development near the project area includes the projects listed in Table 4.1-1 (Existing Projects or Programs in the Project Area) and future projects are listed in Table 4.1-2 (Future Foreseeable Projects in the Project Area). These

projects would add large and small-scale industrial, utility-related and other uses in the region, resulting in the loss of access to land, including in the DFA, in Eastern Riverside County. However, most renewable projects listed in Table 4.1-2 are proposed in locations designated as a DFA and these projects would avoid or minimize conflicts with existing BLM-administered lands designated for other uses. The CDCA Plan, as amended by the DRECP, specifically planned for the concentration of renewable energy in the DFAs. Projects would be required to accommodate the ancillary infrastructure (i.e., gen-tie lines, access roads, etc.) from nearby projects including other renewable projects. Therefore, the cumulative effects of the renewable development in the DFA would be minimized.

While construction and operation effects of the projects included in the cumulative scenario would potentially conflict with habitat conservation or natural community conservation plans, past, present, and reasonably foreseeable projects included in this cumulative analysis would be (or have been) required to include mitigation for any effects. The DRECP LUPA, by identifying areas for conservation and areas for renewable development, is designed to reduce such conflicts. Similarly, it is not likely that cumulative construction effects would affect agricultural land or zoning, as agriculture in the project area is restricted by limited water supplies.

Two proposed projects shown in Figure 4.1-1, the SunEdison Jupiter ROW request (cumulative project J) and the First Solar Development, LLC ROW request (cumulative project K) would be located in the designated utility corridors: Corridor 30-52 and Corridor K. If these projects were constructed, the land encompassed by the projects would not be available for placement of future linear energy facilities. Cumulatively, approximately 4,000 acres of the utility corridors would be unavailable between the project site and Desert Center.

The majority of the corridor blockage would result from two projects: the First Solar project (2,740 acres) and the SunEdison Jupiter project (820 acres). To be constructed through these project areas, any future utility would have to pass around the outermost perimeter of the two solar projects, rather than passing through them. Virtually all of the north half of both corridors would be rendered unusable for future utility projects. As shown on Figure 4.1-1, Cumulative Projects: Existing and Foreseeable, the First Solar project would block the corridor both north and south of the I-10. However, it is unlikely that solar panels for the First Solar project would be approved to be installed south of the I-10, because they would be located within the Chuckwalla ACEC as well as the utility corridor.

Additionally, east of the Palen Solar Project, near Blythe, an additional 1,500 acres of designated corridor would overlap with the currently proposed Desert Quartzsite and Crimson Solar ROW right-of-way applications. The boundaries of these projects are being refined, but the corridor overlap in both cases would occur south of the I-10.

Most of the land south of the projects mapped in Figure 4.1-1, and south of both designated corridors is vacant desert land and would potentially be available for expansion of the corridors to the south along this segment, through a CDCA Plan Amendment.

No Action Alternative. The No Action Alternative would not have any project level effects and would not contribute to cumulative adverse effects.

4.6.4 Mitigation Measures

No mitigation measures are recommended to reduce or avoid adverse impacts to lands and realty.

4.6.5 Residual Effects after Implementation of Mitigation Measures

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.6.6 Unavoidable Adverse Impacts

Because the Proposed Action and alternatives would all encompass some portion of the designated Section 368 corridor, there would be unavoidable adverse effects due to the reduction in available land along the corridor for other project.

4.6.7 CEQA Significance Thresholds and Determinations

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the Proposed Action and alternatives would have significant impacts on lands and realty if they would:

LU-1 Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including but not limited to the general plan, specific plan, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect; or

LU-2 Conflict with any applicable habitat conservation plan or natural community conservation plan.

For the Proposed Action and alternatives, the following CEQA criteria were determined to be inapplicable or to result in no impact under all alternatives. The determination regarding these significance criteria is discussed below, and these criteria are not discussed further.

Land Use and Planning

- *Physically divide an established community:*

  The Proposed Action and alternatives would not physically divide an established community; therefore, there would be no impact. Although there is some residential development outside the project boundary, the Proposed Action and alternatives would not divide any development.

Agriculture and Forestry Resources

- *Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps pursuant to the Farmland Mapping and Monitoring Program (FMMP) of the California Resources Agency and the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, to non-agricultural use:*

  There is no FMMP-designated Prime or Unique Farmland or Farmland of Statewide Importance in the proposed project area; therefore, there would be no impact.

- *Conflict with existing zoning for agricultural use, and/or a Williamson Act contract:*

  There is no existing zoning for agricultural use or Williamson Act contract in the proposed project site; therefore, there would be no impact.

- *Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220[g]), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104[g]):*

  The Proposed Action and alternatives would not be located on any forest land or timberland; therefore, there would be no impact.

- *Result in the loss of forest land or conversion of forest land to non-forest use:*

  The Proposed Action and alternatives would not be located on any forest land; therefore, there would be no impact.

- *Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use:*

  The Proposed Action and alternatives would not be located on any agricultural land or forest land; therefore, there would be no impact.

LU-1 Conflict with Applicable Plans, Policies, or Regulations

The Proposed Action and action alternatives solar layouts would develop up to 4,200 acres of BLM-administered land designated as Development Focus Areas (DFAs) for solar energy production. The land is generally undeveloped and no specific local planned land uses have been identified.

The Proposed Action and the Reduced Footprint Alternative would conflict with the DRECP LUPA because they would not incorporate all the CMAs from that document resulting in a significant impact. However, the Proposed Action and Reduced Footprint Alternative are not subject to the DRECP because it is a pending project. The Avoidance Alternative was designed such that it would not conflict with the DRECP LUPA, so there would be no impact with this alternative. The No Action Alternative would also not result in any impacts. Denial of this project would not foreclose the site to development in the future and any future project at this location would potentially be subject to its own CEQA process. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, any future development would have to comply with the DRECP LUPA.

In conclusion, there would be no impact from the Proposed Action or alternatives in relation to applicable plans, policies, or regulations. Since no significant impacts have been defined for Impact LU-1, no mitigation measures are required.

LU-2 Conflict with HCP or NCCP

There would be no impact to habitat conservation plans (HCPs) or natural community conservation plans (NCCPs) because the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative would not overlap any such plans. The No Action Alternative would also not

have any impacts related to land use, realty, or agriculture with respect to HCPs or NCCPs since under this alternative, the Proposed Action and action alternatives would not be constructed.

Since no impacts have been defined for Impact LU-2, no mitigation measures are required.

Cumulative Impacts

As described in Section 4.6.3, the effects of the Proposed Action or action alternatives, when considered with existing and proposed projects in the area, could present a cumulatively significant impact on lands and realty. Continued development of renewable energy facilities would result in the loss of land available for future development in the area of Eastern Riverside County. There is a potential for reasonably foreseeable future projects be incompatible with existing land use classifications in the area. However, these projects would be located primarily on land designated for renewable energy development, which would minimize and isolate past, present, and reasonably foreseeable future projects' aggregated development impacts in this area and these projects would be required to include mitigation for any effects therefore the impact would not be cumulatively considerable. It is not likely that cumulative construction effects would affect agricultural land or forest land, as agriculture in the area is restricted by limited water supplies and forest lands are not present in the area.

4.7 Mineral Resources

4.7.1 Impact Assessment Methodology

This analysis incorporates the minerals analysis from the BLM's 2011 Plan Amendment/Final EIS (PA/FEIS) for the Palen Solar Power Project (PSPP), Section 4.7, Mineral Resources, and the CEC's 2010 Revised Staff Assessment (RSA), Section D.2, Geology, Paleontology, and Minerals. However, the analysis is modified here to account for the updated environmental baseline and the photovoltaic technology.

The California Geological Survey (CGS) provides information about California's non-fuel mineral resources. The CGS's Mineral Resources Project classifies lands throughout the State that contain regionally significant mineral resources as mandated by Surface Mining and Reclamation Act of 1975 (SMARA). Development generally results in a demand for minerals, especially construction aggregate. The presence or absence of significant sand, gravel, or stone deposits that are suitable sources of aggregate are classified as Mineral Resource Zones (MRZs).

This section describes the direct and indirect effects of the Palen Solar Project (the Proposed Action), as well as the effects of two alternatives and the No Action Alternative.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Because no mitigation measures are recommended, none are presented in Section 4.7.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. None of the APMs are relevant to mineral resources.

4.7.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action: Direct Effects

Construction of the Project would include grading, foundation excavation, utility trenching and pile-driven beams. Neither operation nor decommissioning of the Project would involve ground disturbance of a type that could cause an adverse impact on mineral resources or their availability. However, the proposed solar array would occupy the site and preclude other uses.

There are no active mining claims, mineral leases, mineral materials sales, or mineral materials contracts within the project area. There are no historic records of mineral production from the project area. Sand and gravel are the only known mineral resources present on the site. Use of the site as a solar PV energy facility would preclude the BLM from issuing mineral materials contracts or free-use permits for this resource. However, similar resources are available in nearby Federal lands, and the Proposed Action will not appreciably reduce or restrict the availability of sand and gravel resources beyond the project site. One possible effect could be a slight increase

in haul distances depending on the end-use site for the sand and gravel resources. Any potential on-site sand and gravel resources would become available again following decommissioning of the Project.

As discussed in Section 3.7.2, there is low potential for oil, gas or geothermal resources to be present on the project site. No exploration for oil and gas resources has been performed in the immediate area and no active oil or gas operations are located in the immediate vicinity of the Project. Therefore, the Proposed Action would not affect the availability of these resources.

Based on the analysis above, the Proposed Action would not have a significant effect on the availability of sand and gravel resources, and no impact on the availability of other mineral resources.

Proposed Action: Indirect Effects

The Proposed Action would have no indirect effects or indirectly result in ground disturbance of a type (such as necessary transmission infrastructure) that could cause an adverse impact on mineral resources or their availability.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would be constructed within the same project boundary as the Proposed Action but would eliminate use of the central desert wash that crosses the project site from southwest to northeast. As discussed for the Proposed Action, no mineral resources other than sand and gravel are present on the site. Use of the site under Alternative 1 would preclude the BLM from issuing mineral materials contracts or free-use permits, but would not appreciably reduce or restrict the availability of sand and gravel resources from adjacent Federal lands. As a result, Alternative 1 would have an insignificant effect on the availability of sand and gravel resources and no impact on the availability of other mineral resources.

Due to the very low likelihood of geothermal or oil and gas resources in the area, the alternative would not affect the availability of those resources.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would be constructed within the same project boundary as the Proposed Action but would eliminate the desert dry wash woodland with a 200-foot buffer and areas within the Mojave fringe-toed lizard suitable habitat from areas available for development. With these areas removed from the site, Alternative 2 is estimated to include a 200 MW project (due to the smaller project site available). As discussed for the Proposed Action, mineral resources other than sand and gravel are not present on the site. Use of the site under Alternative 2 would preclude the BLM from issuing mineral materials contracts or free-use permits, but would not appreciably reduce or restrict the availability of sand and gravel resources from adjacent Federal lands. As a result, Alternative 2 would have a negligible effect on the availability of sand and gravel resources, and no impact on the availability of other mineral resources.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to renewable energy development in the future. In addition, the site would be available for sand and gravel development, subject to the requirements of the CDCA Plan, as amended by the DRECP.

Defining the type of project that may be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.7.3 Cumulative Effects

Geographic Scope

The potential for on-site mineral resources other than sand and gravel is low. Therefore, the geographic extent for cumulative analysis pertaining to mineral resources would be the project site. Due to the limited geographic extent for mineral resources, no projects listed in Tables 4.1-1 and 4.1-2 would be within the geographic extent for cumulative analysis.

Cumulative Impact Analysis

The project site is not currently used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. As the Proposed Action would have a negligible and temporary effect on the availability of sand and gravel resources, and no significant impact on the availability of geothermal or other mineral resources, no adverse cumulative impacts would result for these resources.

4.7.4 Mitigation Measures

No mitigation measures are required to reduce or avoid adverse impacts to mineral resources.

4.7.5 Residual Effects after Implementation of Mitigation Measures

No residual adverse impacts to mineral resources would occur.

4.7.6 Unavoidable Adverse Impacts

No unavoidable adverse impacts to mineral resources would occur.

4.7.7 CEQA Significance Thresholds and Determinations

The following significance criteria for mineral resources have been identified based on the CEQA Appendix G Environmental Checklist and adjusted for relevance to this analysis based on local conditions and the project description. For purposes of the CEQA analysis for this Project, an impact is considered significant and require additional mitigation if project construction or if

maintenance of project facilities during project operations would result in any of the following criteria being met:

MR-1 Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

MR-2 Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

MR-1 Render Known Mineral Resources Inaccessible

The project site is not currently used for mineral production, nor is it under claim, lease, or permit for the production of locatable, leasable, or salable minerals. There is a low potential for mineral resources other than sand and gravel on the site.

Use of the site as a solar PV energy facility would not appreciably reduce or restrict the availability of sand and gravel resources from Federal lands outside of the project area. Any potential on-site sand and gravel resources would become available again following decommissioning of the Project. The Reduced Footprint Alternative and the Avoidance Alternative would similarly not appreciably reduce or restrict the availability of sand and gravel resources. While the smaller configuration of the Avoidance Alternative would reduce the extent of the solar field, the DRECP constraints on development would apply similarly to the potential development of sand and gravel resources.

Because the Proposed Action would not occur with the No Action Alternative, no impacts to the accessibility of mineral resources would result from this alternative.

Overall, there would be a less than significant impact to the accessibility of mineral resources. Because no significant impacts have been defined for Impact MR-1, no mitigation measures are required.

MR-2 Loss of Locally Important Mineral Resource Site

The Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative are not located on locally important mineral resource recovery site delineated on a local general plan, State plan, specific plan, or other land use plan; therefore, there would be no impact. Similarly, no impact would result from the No Action Alternative since the Proposed Action would not occur.

Since no impacts have been defined for Impact MR-2, no mitigation measures are required.

Cumulative Impacts

Neither the project site nor any of the cumulative project sites are currently used for mineral production, nor are they under mining claim, mineral lease, materials contract or permit. There is a low potential for mineral resources other than sand and gravel on the sites. Use of the cumulative sites as solar PV energy facilities or other projects would not appreciably reduce or restrict the availability of mineral resources from Federal lands. Any potential on-site sand and gravel resources would become available again following decommissioning of the cumulative projects. Therefore, the Project would not combine with other foreseeable projects to result in a significant cumulative impact pertaining to the loss of availability of a known mineral resource. The Project would therefore result in a less than significant cumulative impact on mineral resources in the area.

4.8 Multiple Use Classes

4.8.1 Impact Assessment Methodology

As was done for the PSPP PA/FEIS, the following analysis focuses on the Proposed Action's potential impacts related to multiple use classes. The Project is located entirely on federal public lands administered by the BLM and designated as Multiple Use Class M (Moderate Use). The Multiple Use Class (MUC) Guidelines identified in the CDCA Plan provide that solar electricity generation facilities may be allowed in MUC-M areas in accordance with Federal, State and local laws subject to approval of a CDCA Plan amendment by the BLM. A discussion of the Project's effects on the CDCA's land use designations is described in Section 4.8.2, while an analysis of the Project's consistency with the CDCA Plan is described in Section 4.8.7.[1]

A CEQA significance criteria are not established for BLM designations, this impact analysis focuses on compliance with BLM regulations and standards.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Any applicable mitigation measures are referenced by title and number in the discussion of effects (Section 4.8.2). Because no mitigation measures are recommended, none are presented in Section 4.8.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. None of the APMs are relevant to multiple use classes.

4.8.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The Proposed Action would occupy or disturb approximately 4,200 acres of BLM-administered lands. These acres were designated MUC-M classified lands per the CDCA Plan. The impacts of the Proposed Action on the MUC-M lands would be similar to those of the PSPP, in that it would convert approximately one percent of all MUC-M lands in Eastern Riverside County to a single use for the duration of the Project (BLM, 2011). The Applicant has submitted an application to the BLM requesting a project-specific CDCA Plan Amendment and ROW grant. No changes in the MUC classification would be required prior to approving the ROW grant. Nonetheless, approval

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[1] In 2016, the BLM released the DRECP Land Use Plan Amendment that eliminated the land use classification, known as the Multiple-Use Classes (MUCs), and replaced them with allocations, including identified California Desert National Conservation Lands, ACECs, Wildlife Allocations, Special Recreation Management Areas, Extensive Recreation Management Areas, Development Focus Areas, Variance Process Lands, and General Public Lands; and specific CMAs for those allocations and areas. Under the DRECP LUPA, the project site is within a Development Focus Area (DFA), which is an area with high-quality solar, wind, and geothermal energy potential, access to transmission, and would allow impacts to be managed and mitigated (BLM, 2015). DFAs are areas where renewable development, operation, and decommissioning would be authorized and incentivized under the DRECP. However, because this project is being evaluated under the CDCA Plan as it existed prior to amendment by the Western Solar Plan and DRECP LUPA, this analysis is included.

of the ROW grant would restrict multiple use opportunities on the project site to a single dominant use for the lifespan of the Project. This restriction would be lifted upon closure and decommissioning of the Proposed Action. Thereafter, use opportunities on the site would return to pre-project conditions.

Alternative 1 – Reduced Footprint Alternative

Alternative 1 would occupy or disturb approximately 3,100 acres of BLM-administered land, which is 1,100 acres less than the Proposed Action. Areas disturbed under Alternative 1 would be on MUC-M classified lands per the CDCA Plan. No changes in the MUC classification would be required prior to approving a ROW grant for this alternative. The impacts of the Reduced Footprint Alternative on the MUC-M lands would be similar to those of the Project, in that it would convert approximately one percent of all MUC-M lands in Eastern Riverside County to a single use for the duration of the alternative. This restriction would be lifted upon closure and decommissioning of Alternative 1. Thereafter, use opportunities on the site would return to pre-project conditions.

Alternative 2 – Avoidance Alternative

Alternative 2 would occupy or disturb a maximum of 1,620 acres of BLM-administered land, which is 2,580 acres less than the Proposed Action. Areas disturbed under Alternative 2 would be on MUC-M classified lands per the CDCA Plan. No changes in the MUC classification would be required prior to approving a ROW grant for this alternative. While the Avoidance Alternative would occupy less MUC-M lands than the Project, the total MUC-M lands in Eastern Riverside County that would be converted to a single use would be comparable to the Project (i.e., approximately one percent). This restriction would be lifted upon closure and decommissioning of Alternative 2. Thereafter, use opportunities on the site would return to pre-project conditions.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.8.3 Cumulative Effects

As noted above, the DRECP eliminated the MUC system. The DRECP and LUPA are landscape scale decisions driven by the need to accommodate renewable energy development and biological resource conservation. Because the Proposed Action is located within a DFA, it was already taken into consideration as part of the cumulative effects of developing up to 20,000 MW of renewable energy within the DRECP.

4.8.4 Mitigation Measures

No mitigation measures are recommended.

4.8.5 Residual Effects after Implementation of Mitigation Measures

Because no mitigation measures are recommended, there would be no change in project impacts resulting from mitigation.

4.8.6 Unavoidable Adverse Impacts

Approval of the Proposed Action would result in no unavoidable adverse impacts on MUC-M lands.

4.8.7 Resource Management Plan/Land Use Plan Amendment Consistency Analysis

California Desert Conservation Area Plan

As discussed in Section 3.8.2 of this Draft SEIS/EIR/LUPA, and in the 2013 Draft SEIS for the PSEGS, the Proposed Action or any of the action alternatives would require a CDCA Plan Amendment that would designate project study area as being suitable and available for large-scale solar energy development. Neither the proposed solar facility site nor the proposed gen-tie line route are currently identified in the CDCA Plan for these intended uses. Two additional amendments are proposed to be added to this section of the CDCA, and would read "The Palen Solar Project is allowed" and "The Palen Solar Project gen-tie is allowed outside of a designated corridor."

To inform the Plan Amendment decisions, the BLM will rely on the environmental and other analysis set forth in: (1) the PSPP PA/FEIS (Section 4.8.7 includes an analysis of the Amendment to "allow" the solar generating facility); (2) the Draft SEIS/EIR (Section 4.8.7 includes an analysis of the Amendment to "allow" the gen-tie line outside of a designated corridor), and (3) this Draft SEIS/EIR/LUPA that has been prepared for the Proposed Action.

As described, all of the BLM-administered lands proposed for use by the Project and alternatives are classified in the CDCA Plan as MUC-M. Multiple use class designations govern the type and degree of land uses allowed within the classification area. All land use actions and resource-management activities on BLM-administered lands within a MUC delineation must meet the guidelines for that class. See Table 3.8-1 in Section 3.8 (Multiple Use Classes) for MUC-M Resource Management Guidelines that are applicable to the Proposed Action.

MUC-M allows electric generation plants for solar facilities to be developed in accordance with Federal, State and local regulations after NEPA requirements are met. The specific application of the Multiple Use Class designations and resource management guidelines for a specific resource or activity are further discussed in the plan elements section of the CDCA Plan. In MUC-M designations, the authorized officer is directed to use judgment in allowing for consumptive uses by taking into consideration the sensitive natural and cultural values that might be degraded.

Acknowledging that energy generation and transmission are "allowed" in MUC-M designated areas with a CDCA Plan Amendment, the land use plan consistency analysis presented in PSPP PA/FEIS Section 4.8.7 applies equally to the Proposed Action.

Class M lands are to be managed to protect air quality and visibility in accordance with Class II objectives of Part C of the Federal Clean Air Act as amended. The anticipated maximum emissions that would be associated with the Proposed Action are provided in Table 4.2-2 for construction and Table 4.2-3 for operation and maintenance activities (see Section 4.2, Air Resources). The analysis in Section 4.2 indicates construction emissions could contribute to exceedances of the ozone and PM10 standards. Project operations would contribute to existing exceedances of the PM10 standards but would be minimal and would be reduced further by implementing mitigation. However, these increases would not exceed USEPA thresholds for Prevention of Significant Deterioration (PSD) in Class II areas, and therefore would be consistent with the CDCA Plan.

Other resources noted in the CDCA Plan include the following: Agriculture, Water Quality, Cultural and Paleontological Resources, Native American Values, Electrical Generation Facilities, Transmission Facilities, Communication Sites, Fires Management, Vegetation, Land Tenure Adjustment, Livestock Grazing, Minerals, Motorized Vehicle Access/Transportation, Recreation, Waste Disposal, Wildlife Species and Habitat, Wetland Riparian Areas, and Wild Horses and Burros. As described in the 2011 PSPP PA/FEIS and the 2013 Draft SEIS for the PSEGS and further updated in this Supplemental EIS/EIR, use of the proposed site for a solar energy facility such as the Proposed Action would meet the CDCA's Multiple Use Class Guidelines (BLM, 2011 and 2013).

California Desert Conservation Area Plan, as Amended by DRECP

As described in Section 3.8.1 (Multiple Use Classes), the DRECP amended the CDCA and eliminated the Plan's existing land use classification system. The project site is within a DFA, which is an area where renewable development, operation, and decommissioning would be covered under the DRECP. With the DRECP LUPA ROD, the types of land use actions allowed at the project site would continue to include energy and utility development. Consequently, a CDCA Plan Amendment that would designate the project area as being suitable and available for large-scale solar energy development would be consistent with the DRECP LUPA.

4.8.8 CEQA Significance Thresholds and Determinations

CEQA does not provide specific guidance or thresholds for determining the level of significance of Multiple Use Classes within Appendix G. Therefore, no significance determination has been made. Significance criteria for land use is presented in Section 4.6.7.

4.9 Noise

4.9.1 Impact Assessment Methodology

Noise and vibration impacts associated with the Proposed Action and alternatives were identified by independent evaluation of various project-related components capable of producing changes in ambient noise and vibration levels. The identified issues include:

- Noise from on-site construction activity at the solar field site (including the project substation), and along the electrical transmission gen-tie line corridor;
- Noise from construction-related vehicle traffic;
- Noise from facility operations; and
- Vibration impacts from on-site construction activity.

Noise impacts to wildlife are addressed in this Supplemental EIS/EIR in Section 4.21, Wildlife Resources.

The area of interest for noise and vibration issues is typically localized. Airborne noise dissipates fairly rapidly with increasing distance from the noise source. The distances involved depend primarily on the intensity of the noise generated by the source, and partly on weather conditions such as wind speed and direction, the height and strength of temperature inversions, and the height of cloud cover. Sound is detectable somewhat further downwind than upwind of a noise source. Temperature inversions and cloud cover can reflect or refract sound that is radiated upwards; this effect can increase noise levels at locations that receive the reflected or refracted sound. Such reflection and refraction effects are important primarily for high intensity sounds. For noise sources such as construction activity and vehicle traffic, although potentially audible over large distances, the region of greatest influence is typically less than 0.25 miles (1,320 feet) from the noise source.

Ground-borne vibrations similarly dissipate rapidly with increasing distance from the vibration source. The distances involved depend primarily on the intensity of the vibrations generated by the source, and partly on soil and geologic conditions. Detectable vibrations will travel the greatest distance through solid rock and the least distance through loose, unconsolidated soils or saturated soils. For vibration sources such as construction activity and vehicle traffic, the region of influence is typically less than 200 feet from the vibration source.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Applicable mitigation measures are referenced by title and number in the discussion of effects (Section 4.9.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.9.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. One APM is relevant to noise.

4.9.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The project site is in the Colorado Desert of Riverside County, and this is an area of primarily undeveloped land, except for one residence within a palm date nursery on the western border of the site. Although only two residences or noise-sensitive receptors are within 3,500 feet of the project site boundary, the Proposed Action would impact ambient noise and vibration levels as a result of project construction, operations and maintenance, and decommissioning equipment and vehicles as well as from the introduction of construction or operations and maintenance-related traffic on local roads near the proposed solar facility site.

Proposed Action: Direct Effects

Construction Activities. Construction of the Proposed Action would involve use of a wide range of construction vehicles and equipment throughout the 30-month construction period and across the 4,200 acres proposed for the solar fields. The heavy-duty fleet of diesel-powered equipment (described in Section 2.2, Proposed Action) would be the greatest source of construction noise. Truck traffic and other on-highway traffic noise would occur for delivery of steel, modules, panels, inverters and transformers, the O&M building components, and for movement of the work crew and delivery of other materials including concrete and water.

All construction activities would create both intermittent and continuous noises depending on equipment usage and loading. Examples of intermittent noise would be from periodic, short-term equipment operation such as while cranes are positioning equipment or while loading or off-loading materials. The activities likely to create the highest levels of noise would be pile driving for installing posts, poles, or other structural elements. Continuous noise would result from steady equipment operation over longer construction periods, such as during trenching, grading or mixing and pouring concrete. The maximum construction noise levels would intermittently range up to 80 to 85 dBA at 50 feet from each active piece of typical construction equipment, and up to 96 dBA at 50 feet from each vibratory pile driver (FTA, 2006).

Sound from an individual source or piece of equipment will naturally attenuate over distance by decreasing six dBA with every doubling of distance from the source, based on the spherical divergence of the sound waves radiating outward from the point of the source (Caltrans, 2009). This means that at a distance of 100 feet between a typical noise source and receiver, the maximum noise level from equipment that produces 85 dBA at 50 feet would be approximately 79 dBA; beyond a distance of 200 feet, the level from the same noise source would be 73 dBA or lower. These levels are conservatively high in that they assume a smooth plane and do not account for intervening topography, vegetation, or structures.

The nearest noise-sensitive receptor is one residential structure 25 feet from the project site boundary. This residence would be the location of greatest noise impact from project-related activities. Peak noise levels (Lmax) up to up to 96 dBA could be experienced when use of a vibratory pile driver occurs within 50 feet of the receptor (FTA, 2006). All other activities within the project

site boundary would cause lower noise levels, and most activity would occur at greater distances from the residence. The combined effects of activities like installing piers and supports for the solar panel modules, mixing and pouring concrete for foundations, and excavating trenches would cause adverse effects when near the residence. For example, the modeled resulting noise level for these activities within 400 feet of the nearest residence is 72 dBA Leq, and within 3,000 feet, the noise level at the residence would be 55 dBA Leq. The noise levels experienced by all other locations would be lower than these due to the greater distances. Construction noise would be within Riverside County's normally acceptable daytime range of 55 dBA for rural residential land uses for any location more than 3,000 feet from the activity. Persons exposed to onsite noise levels would be provided protection in compliance with occupational safety standards for protecting workers.

Construction activities for the portions of the solar facility nearest to the existing residents in the area would create adverse impacts due to the short-term construction noise levels. The local general plan and noise ordinance do not specify a maximum dBA limit for construction noise sources, as long as construction occurs during the time period indicated by the ordinance. This means that the resulting levels would not be in excess of applicable agency standards. To be consistent with the Riverside County Noise Ordinance, construction within a quarter mile of an inhabited dwelling must be limited to 6:00 a.m. to 6:00 p.m. during the months of June through September and are limited to 7:00 a.m. to 6:00 p.m. during the months of October through May. During periods of hot weather or instances where time-critical activities must be completed, certain construction activities could occur for 24 hours per day. Figure 2-2, Proposed Action, Project Area Detail, shows the development area that spans between 0.5 and 4 miles; thus the majority of construction activities would normally be more than a quarter mile from any property boundary. Mitigation would ensure that construction activities outside of the schedule of the Noise Ordinance would be limited to light-duty equipment and vehicles, unless otherwise approved by the County of Riverside.

The average healthy ear experiences a change of three dBA as "barely perceptible," while a five-dBA change is "readily perceptible" (Caltrans, 2009). Existing background noise levels near the solar facility site are low, depending on proximity to I-10, with typical daytime noise levels between 35 to 50 dBA. Background noise levels would be higher during periods of strong winds. Measured noise levels were 43 dBA Leq in the daytime and 34 dBA Leq during the nighttime, at the nearest residences (see Section 3.9). Based on construction noise estimates presented above, construction activity would cause a 12 dBA increase over the daytime ambient noise level for locations within 3,000 feet, and this change would be sufficient to create annoyance. When construction activities are further than approximately 7,000 feet of the residence, the increase over the ambient levels would be less than a five-dBA change, which would not be "readily perceptible."

Construction would also cause off-site noise due to traffic, primarily from commuting workers and from trucks bringing materials to the project site. The peak noise levels associated with passing trucks and commuting worker vehicles would be approximately 70 to 75 dBA at 50 feet, and this noise would be concentrated along the roads that access the site between I-10 and the site. No noise-sensitive receptors would be affected by traffic noise.

When compared with the solar trough technology that was analyzed in the PSPP PA/FEIS, the Proposed Action would involve a shorter construction schedule and a shorter duration of potentially adverse construction noise impacts.

Ground Vibration from Construction Activities. Ground vibration from most types of equipment used for solar facility construction would not be perceptible at distances of 200 feet or more from the equipment in use. The level of groundborne vibration that could reach sensitive receptors depends on what equipment is creating vibration, the distance to the receptor, and the soil conditions surrounding the construction site. For vibratory pile drivers, the typical vibration level in terms of peak particle velocity (PPV) at a reference distance of 25 feet is 0.170 inches/second and 93 VdB (FTA, 2006). This source would have the greatest radius of potential impact; however, ground vibrations would not be perceptible at distances of 300 feet or more from the vibratory pile driver. The nearest residence approximately 25 feet from the site boundary would be exposed to perceptible ground vibrations, possibly at levels that would annoy occupants of the residence if the point of pile insertion is within 100 feet of the residential structure. This impact would be adverse during the limited duration of pile driving nearest to the structure (within 100 feet). Although the construction-related vibrations would be perceptible and potentially annoying, the ground movement would pose a very low risk of cosmetic damage to any existing structures near the proposed solar facility.

Operations and Maintenance Activities. Noise generated from operations and maintenance of the proposed solar facility would include noise generated by stationary equipment associated with the power blocks and inverters, the substation and switchyard, the motorized tracking-system, the O&M building, and the audible corona effect of the gen-tie line. The power inverters and transformers only operate when the solar panels produce electricity in the daytime.

All equipment would be required to comply with the stationary source noise standards of the Riverside County Noise Ordinance, which limits the noise received by the adjacent rural residence to no more than 55 dBA Lmax during the daytime hours (7:00 a.m. to 10:00 p.m.) or 45 dBA during the nighttime hours (10:00 p.m. to 7:00 a.m.) at the property boundary.

Identifiable sources of operation and maintenance noise from vehicles would include on-site vehicle use for panel-washing, vegetation treatment, delivering equipment and crews for maintenance activities, including occasional road maintenance. There would be limited amounts of vehicle traffic on the site; this vehicle activity would be intermittent and would not be expected to generate adverse off-site noise effects. Use of vehicles for operations and maintenance activities at the solar facility site would generate minimal noise.

The Proposed Action would develop a solar field within the 4,200-acre project area with 200 power blocks each producing 2.5 MW AC. Each power block would require two 1.25 MW inverters, set along the access roads, in the middle of the panel array area; each power inverter would be enclosed, up to 10 feet tall, with an adjacent electrical transformer to transmit the AC power via underground cabling to the on-site project substation. Based on typical performance specifications for a commercial or utility-scale inverter with cooling system and enclosure, each 2.5 MW power block could use two inverters, each with a rated sound level of 63 dBA at 10 meters or a single, larger inverter with a sound level of 66 dBA at 10 meters. Assuming that the inverters would be at least 200 feet from any property site boundary, the resulting noise level would be 55 dBA Leq or lower for all off-site locations, including the adjacent residence. As such, these sources would not be expected to generate adverse off-site noise effects.

Auxiliary equipment for the transformers, O&M building, and the on-site project substation would include cooling fans and pumps. For the electrical equipment, these would operate depending on the internal temperature components and the transformer oil. This type of noise would have a broad-band spectrum and would not include simple tones or a "hum." The noise produced by the inverters and transformers would depend on the final equipment selected and the ultimate locations of the equipment. Because the inverters and transformers would not be positioned near the site boundary, the noise from the inverters within the site would diminish over the distance to levels comparable to daytime ambient levels at the project site boundary. These stationary sources would not create noise during the nighttime.

Tracker motors and mechanisms would allow the solar panels to tilt and track the path of the sun on a single axis throughout the day. These motors and actuators would not operate on a continuous basis or in unison. For example, each set of actuators would operate for a few seconds and then pause for five minutes before operating again. This process would occur only during daylight hours, with a return to the starting position at sunrise. Although final design would determine the actual specifications for the motors, based on similar projects, noise from each motor and actuator would be about 62 or 63 dBA at the source or a distance of 3.28 feet (1 meter). At the project site boundary, the noise level from this source would be below the daytime ambient levels. As such, tracker motors and mechanisms would not exceed any standard or contribute to a measurable or detectable change in ambient noise levels. No other notable stationary sources of noise would be needed, such as stationary engines or boilers.

When compared with the solar trough technology that was analyzed in the PSPP PA/FEIS, the Proposed Action would involve no heat transfer fluid, and no heat transfer system or steam turbine. The Proposed Action would cause lower levels of operation-phase noise.

Closure, Decommissioning and Restoration. All operational noise at the site would cease when the plant facilities close, and no further noise impact from its operation would occur. The anticipated operational lifespan of the proposed solar facility is estimated to be at least 30 years. The Decommissioning Plan and closure may require complete removal of equipment and restoration of the land to BLM-approved specifications. Above-ground structures would be removed, and the site would be returned to original conditions. The scope of activities, the range of equipment involved, and noise levels associated with the closure, decommissioning, and restoration would be similar to those for project construction. In addition, any local, state or federal noise laws and regulations in existence at that time also would apply.

When compared with the solar trough technology that was analyzed in the PSPP PA/FEIS, the Proposed Action would involve a shorter duration of noise from decommissioning activities as fewer components would need to be removed.

Proposed Action: Indirect Effects

There are no indirect effects related to noise and vibration for construction, operations and maintenance, or decommissioning.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would have a reduced development footprint (3,100 acres) when compared with that of the Proposed Action (4,221 acres), with the solar fields being configured to fit within two separate portions of the site, to avoid use of the central desert wash and retain vegetation on the site. Construction, operations and maintenance, and decommissioning activities would be the same as with the Proposed Action. Therefore, the noise effects due to development activities and solar field equipment would be the same as those of the Proposed Action.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would have a much smaller development footprint (1,620 acres) than that of the Proposed Action (4,221 acres), and this would allow preservation of natural areas and habitat on the site that would otherwise be developed as part of the Proposed Action. Construction, operations and maintenance, and decommissioning activities would be the same as with the Proposed Action, with proportionately less activity related to the smaller development footprint. The noise effects due to development activities and solar field equipment would be reduced by reducing either the number of sources or the duration and intensity of activities when compared with the Proposed Action. The areas available for development under the Avoidance Alternative include the region closest to the occupied residence along the northwest corner of the Palen site. Therefore, while this alternative would reduce the level of activity or duration of construction, it would not reduce the noise effects to this sensitive receptor described for the Proposed Action.

No Action Alternatives

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. No new noise sources would occur at this application site unless a future project occurs at this location.

4.9.3 Cumulative Effects

Geographic Scope

The geographic scope for cumulative analysis of noise and vibration is generally localized. Noise sources attributable to cumulative projects may cause adverse effects within approximately one mile of a project site including truck routes, but the region of greatest influence is typically less than 0.25 miles from the noise source. Similarly, vibration sources that typically occur with construction activity or vehicle traffic have a region of influence that is limited to approximately 200 feet. The geographic scope and elements to consider for noise and vibration effects are the Westwide Section 368 Energy Corridors and the Desert Renewable Energy Conservation Plan.

Cumulative Impact Analysis

The only cumulative projects within the geographic scope are planning documents and would not themselves result in noise impacts. Both planning documents could result in additional construction of renewable energy projects and transmission line would generate noise during construction and routine operations. As with construction of the Proposed Action or alternatives,

equipment used for cumulative renewable energy projects and other development depends on site-specific needs and schedules, but active pieces of construction equipment normally cause between approximately 80 to 85 dBA when measured 50 feet from the source. Construction-phase noise impacts would be short-term and limited in nature, with construction activities for all cumulative projects normally being limited to the daytime. Few if any cumulative construction activities would be within one mile of the Proposed Action, or would have the potential to cause overlapping construction noise impacts with construction of the proposed solar facility. The duration of construction work for the Proposed Action would be approximately 30 months, and after that time, few notable permanent sources of noise would occur. All renewable energy project operations would generate noise from employee vehicles accessing the site, power inverters, and other power system infrastructure. These sources may cause localized cumulative effects where multiple projects are adjacent to a sensitive receptor. Because no cumulative project sites would be likely to create a permanent source of noise or adverse change in noise levels at the residence that is nearest to the Proposed Action or alternative, no cumulative effects would be likely from construction or routine operations of the proposed solar facility.

Cumulative noise impacts would be reduced through compliance with local laws and regulations and implementation of typical mitigation to protect sensitive receptors from noise and implement feasible noise controls. Cumulative renewable energy projects and other development that is subjected to the environmental permitting process would have a detailed analysis of noise and land use conflicts as part of the project-level environmental review. The permitting process normally requires each project to comply with local standards and to avoid noise-related land use conflicts. This means that all projects, even if unrelated to the Proposed Action, would need to comply with the local community noise standards, such as the Riverside County Noise Ordinance. Additional mitigation may be applied to the cumulative projects through environmental permitting by lead agencies.

Cumulative effects due to groundborne vibration would occur only if there were sources of the vibration within 200 feet from the Palen Solar Project. As there are no cumulative projects within 200 feet of the site, no cumulative effects would be likely from groundborne vibration.

4.9.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There is 1 APM relevant to noise (Section 2.2.7, Chapter 2). Table 4.9-2 explains how this measure reduces project effects, and how it relates to mitigation measures recommended below.

Table 4.9-2. Applicant Proposed Measures for Transportation and Public Access

APM #	Text	Explanation
APM-6	For activities that may impact Focus or BLM Special Status Species, implement the following measures for noise: ▪ To the extent feasible, and determined necessary by BLM to protect Focus and BLM sensitive wildlife species, locate stationary noise sources that exceed background ambient noise levels away from known or likely locations of and BLM sensitive wildlife species and their suitable habitat. ▪ Implement engineering controls on stationary equipment, buildings, and work areas including sound-insulation and noise enclosures to reduce the average noise level, if the activity will contribute to noise levels above existing background ambient levels. ▪ Use noise controls on standard construction equipment including mufflers to reduce noise	Incorporated into the analysis of the Project.

All alternatives except for No Action Alternative would result in adverse noise and vibration impacts, primarily during the construction phase; thus, incremental impacts to ambient noise levels cannot be entirely avoided. However, the magnitude of the project-specific impact has been limited as much as possible with the Proposed Action in conjunction with the relevant mitigation measures presented below to control noise from construction activities and during operations. These mitigation measures were originally presented for the PSPP project and have been reviewed and revised to ensure they include current information and are appropriate for the amended technology.

NOISE-1 **Public Notification Process.** At least 15 days prior to the start of ground disturbance, the project owner shall notify all residents within one mile of the project site and the linear facilities, by mail or by other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the Project. If the telephone is not staffed 24 hours a day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction where it is visible to passersby. This telephone number shall be maintained until the Project has been operational for at least one year.

NOISE-2 **Noise Complaint Process.** Throughout the construction and operation of the Project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints. The project owner or authorized agent shall:

1. use the Noise Complaint Resolution Form (below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
2. attempt to contact the person(s) making the noise complaint within 24 hours;
3. conduct an investigation to determine the source of noise in the complaint;
4. if the noise is project related, take all feasible measures to reduce the source of the noise; and

5. submit a report documenting the complaint and actions taken. The report shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant stating that the noise problem has been resolved to the complainant's satisfaction.

NOISE-3 **Employee Noise Control Program.** The project owner shall submit to the BLM APO for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance to the applicable OSHA and Cal-OSHA standards.

NOISE-4 **Noise Restrictions.** The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that the operation of the Project will not cause the noise levels due to plant operation alone, during the daytime hours of 7 a.m. to 10 p.m. to exceed an average of 42 dBA Leq measured at or near monitoring location LT1.

No new pure-tone components shall be caused by the Project. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

A. When the Project first achieves a sustained output of 85% or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at monitoring location LT1, or at a closer location acceptable to the BLM APO. This survey shall also include measurement of one-third octave band sound pressure levels to ensure that no new pure-tone noise components have been caused by the Project.

   The measurement of power plant noise for the purposes of demonstrating compliance with this condition of certification may alternatively be made at a location, acceptable to the BLM APO, closer to the plant (e.g., 400 feet from the plant boundary) and this measured level then mathematically extrapolated to determine the plant noise contribution at the affected residence. The character of the plant noise shall be evaluated at the affected receptor locations to determine the presence of pure tones or other dominant sources of plant noise.

B. If the results from the noise survey indicate that the power plant noise at the affected receptor site exceeds the above value during the above time period, mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

C. If the results from the noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

NOISE 5 **Occupational Noise Survey.** Following the Project's attainment of a sustained output of 85% or greater of its rated capacity, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas in the facility.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095 5099 (Article 105)

and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures to be employed in order to comply with the applicable California and federal regulations.

NOISE-6 **Construction Restrictions.** Heavy equipment operation and noisy construction work relating to any project features shall be restricted to the times delineated below, unless a special permit has been issued by the County of Riverside:

- June through September: 6 a.m. to 6 p.m.
- October through May: 7 a.m. to 6 p.m.

Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use shall be limited to emergencies.

4.9.5 Residual Effects after Implementation of Mitigation Measures

Residual impacts to ambient noise levels would exist even with implementation of relevant mitigation measures. Implementation of mitigation for construction noise would reduce the annoyance that would otherwise occur due to developing portions of the Proposed Action or alternatives in the vicinity of the adjacent residence. Because there would be periods where some construction activities could occur for 24 hours per day, some construction noise would be outside of the permitted construction hours identified in the Riverside County Noise Ordinance. During these instances, the off-site residences would be exposed to increased noise levels during nighttime hours, if approved by the County of Riverside.

No residual impact would result from operation of the Proposed Action because the operational noise levels would comply with applicable limits and would be further minimized through the implementation of mitigation.

4.9.6 Unavoidable Adverse Impacts

Construction and operation of the Proposed Action or alternatives would result in unavoidable adverse impacts during periods where construction activities at the site occur outside of the permitted construction hours, as identified in the Riverside County Noise Ordinance Code.

4.9.7 CEQA Significance Thresholds and Determinations

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the Proposed Action and alternatives would have significant impacts on noise if they would result in:

NOI-1 Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies; or

NOI-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels; or

NOI-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or

NOI-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project; or

NOI-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels; or

NOI-6 For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

There are two private airstrips in the general project vicinity. The Desert Center Airport is about 5 miles northwest of the proposed solar facility site, and the Eagle Mountain Airstrip is about 15 miles to the northwest of the project site. Both airstrips have very low use levels. Desert Center Airport is a private airstrip at the Chuckwalla Valley Raceway. None of the project alternatives would introduce residential land uses to noise from aircraft, and all project features are outside the airfield properties. Because the Proposed Action would not expose people to noise from an airport or airstrip, no impact would occur. Consequently, airport-related noise issues (Criteria NOI-5 and NOI-6) are not discussed further for any of the alternatives.

NOI-1 Noise Levels in Excess of Established Standards

This criterion assesses whether the Proposed Action or alternatives would result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Construction-Phase Impacts. The Riverside County Noise Ordinance allows noise from construction activities, and designates this noise as exempt, when the construction project is located a quarter mile or more from the nearest inhabited dwelling, or when the construction project is located within a quarter mile of an inhabited dwelling and the activities are limited to certain daytime hours. Figure 2-2, Proposed Action, Project Area Detail, shows the development area, and the majority of construction activities would be more than a quarter mile from any property boundary. With the mitigation to ensure that construction activities outside of the schedule of the Noise Ordinance would be limited to light-duty equipment and vehicles, no maximum dBA limit would apply for construction noise although onsite noise exposure would need to comply with occupational safety standards for protecting workers. Accordingly, construction would not result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies, and this impact would be less than significant.

Operational-Phase Impacts. The applicable standards in the Noise Ordinance (Chapter 9.52.040 and also Section 4 of Ordinance No. 847) limits noise on any property that causes the exterior noise level on any other occupied property. It ensures that noise levels at the receiving land use that is a low-density "Rural Community" shall not exceed 55 dBA Lmax during the daytime hours

(7:00 a.m. to 10:00 p.m.) or 45 dBA during the nighttime hours (10:00 p.m. to 7:00 a.m.). All equipment on the project site would be required to comply with the stationary source noise standards of the Noise Ordinance, and essentially no stationary source noise would occur during the nighttime. Low levels of daytime noise would occur from sources within the site including the tracker motors and the inverters. Inverters would at least 200 feet from any property site boundary, and as such the resulting noise level would be 55 dBA or lower for all off-site locations, including the adjacent residence. Along with this equipment, use of vehicles for operations and maintenance activities, such as panel-washing, vegetation treatment, and movement of equipment and crews within the solar facility site, would generate minimal noise that would be intermittent and would not be expected to generate adverse off-site noise effects. The resulting operational-phase noise levels from facility would be less than the most-stringent property line standard of 55 dBA for daytime noise as in the Noise Ordinance. Accordingly, operations and maintenance would not result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies and this impact would be less than significant.

NOI-2 Excessive Groundborne Vibration or Groundborne Noise Levels

This criterion assesses whether the Proposed Action would result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

Construction-Phase Impacts. During construction, the vibratory pile drivers used for installing posts would have the greatest radius of potential groundborne vibration impacts. When this source is nearest to the off-site residence, or within 100 feet, vibration would be perceptible and would potentially annoy occupants of the residence. Other construction activities would create lower levels of vibration and would not be perceptible at distances of 200 feet or more from the equipment in use. Although vibration could annoy occupants of the residence if the point of pile insertion is within 100 feet of the nearest residential structure, no other residences would be near enough to the pile driving or to other routine construction activity to experience excessive levels of construction vibrations. Project-related vibrations would not cause adverse effects to structures because no structures susceptible to damage are known to be nearby. When vibration levels are low enough to avoid causing an annoyance, they would be unlikely to cause structural damage. Impacts from vibrations would be localized and temporary (i.e., infrequently recurring during the limited duration of construction nearest the residence), and therefore, would not be excessive, resulting in a less than significant impact.

Operational-Phase Impacts. Operation of the solar facility would not generate perceptible levels of vibration in the surrounding area. There would be no permanent source or potential to change vibration levels, except during unscheduled maintenance or repair activities, which are similar to construction. This impact would be less than significant.

NOI-3 Substantial Permanent Increase in Ambient Noise Levels

This criterion assesses whether the Proposed Action would result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the Project.

Permanent noise sources occurring with the Project would be limited to the trackers and the inverters and transformers that operate when the solar panels produce electricity and the occasional

vehicular noise from crews for operations and maintenance, including security patrols and panel washing. These activities would normally involve only a small crew, and the project-related traffic would be sporadic so that it would result in a barely perceptible noise increase of less than three dBA over conditions that exist without the Project.

The increase in ambient noise levels caused by stationary equipment associated with the power blocks and inverters operating on the project site would not be sufficient to substantially change surrounding day-night ambient noise levels. The site is in a setting of low ambient noise levels, measured to be 43 dBA Leq in the daytime at the nearest residences (see Section 3.9). The off-site noise levels nearest to the proposed power blocks and inverters would be at or below 55 dBA Leq near the site boundaries. With greater distances from the site boundaries, the noise levels would quickly diminish. For locations surrounding the site and more than about 200 feet from the boundaries, the increase over the daytime ambient levels would be less than a five-dBA change, which would not be "readily perceptible." The project-related equipment would not create noise during the nighttime. Additionally, mitigation would ensure that the project design and implementation would include sufficient noise controls, and that these controls would be verified by an updated noise survey, to a daytime goal of 42 dBA Leq, measured at or near the nearest residence. As such, the noise from the stationary sources would not contribute substantially to day-night noise levels for any sensitive receptors near the Project, and this impact would be less than significant.

NOI-4 Substantial Temporary or Periodic Increase in Ambient Noise Levels

This criterion assesses whether the Proposed Action would result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the Project.

Temporary or periodic increases in ambient noise levels would occur during construction, and the construction noise would affect the receptors closest to the project site. The noise levels existing without the Project are measured to be 43 dBA Leq in the daytime at the nearest residences (see Section 3.9). The construction noise impact to ambient noise levels would be intermittent and variable in nature, depending on day-to-day activities, and it would naturally attenuate or diminish over distance. While limited to the duration of work, approximately 30 months, use of construction equipment at the site would result in a readily perceptible, but temporary, increase in daytime environmental noise. Construction would be readily perceptible in the setting of low ambient noise, and the increase in noise levels would be sufficient to create annoyance.

The Proposed Action would be implemented with mitigation to reduce noise and to avoid creating a substantial increase in ambient noise levels. The majority of construction activity would be far from the nearest residence because the development area generally spans between 0.5 and 4 miles, and the number of receptors in the vicinity is limited. The intermittent and variable nature of construction noise limits the potential for adverse effects such as annoyance to be experienced by off-site receptors. Sleep interference would not be a concern because nighttime construction would be avoided. While readily perceptible for the nearest receptors, these considerations indicate that the resulting noise levels due to construction would not be considered substantial. Mitigation would ensure that construction activities outside of daytime hours would be limited to light-duty equipment and vehicles, and notification and complaint resolution processes would be

established. By mitigating the effects of the construction noise, this impact would be less than significant.

Cumulative Impacts

Cumulative impacts to noise and vibration are described in Section 4.9.3. As discussed therein, the only cumulative projects within the geographic scope are planning documents and would not themselves result in noise impacts. Both planning documents could result in additional construction of renewable energy projects and transmission line would generate noise during construction and routine operations. However, as there are no renewable projects currently proposed within the geographic scope, the likelihood of the construction of the Proposed Action or alternative overlapping with a future project implemented under the planning documents is unlikely and there would be no significant cumulative impact. Cumulative impacts due to groundborne vibration would occur only if there were sources of the vibration within 200 feet from the Palen Solar Project or alternative. As there are no cumulative projects within 200 feet of the site, no significant cumulative impact would occur.

4.10 Paleontological Resources

This section describes and evaluates the effects related to paleontological resources of the Palen Solar Project (PSP or Proposed Action), the No Action Alternative, and other alternatives. However, it modifies the analysis to account for the updated environmental baseline and the photovoltaic technology.

This analysis is based on paleontological resources analyses from the PSPP Revised Staff Assessment (RSA) Part II (Section D.2, Geology, Paleontology, and Minerals; CEC, 2010) and the Paleontological Resources Assessment (PRA) for the Palen Power Project, Riverside County, California (SWCA, 2009; see Appendix C-1). New information since 2010 and 2011 are also drawn, where applicable, from the PSEGS Draft SEIS Section 3.11 (Paleontological Resources; BLM, 2013) and the PSEGS Paleontological Resources Assessment (Nials, 2013; see Appendix C-2).

4.10.1 Impact Assessment Methodology

The Antiquities Act of 1906 (54 U.S.C. § 320301–320303) requires that objects of antiquity be taken into consideration for federal projects. The Paleontological Resources Preservation Act (PRPA) of 2009 and proposed revisions of PRPA (2016) require the Secretaries of the United States Department of the Interior and Agriculture to manage and protect paleontologic resources on Federal land using scientific principles and expertise. The potential for discovery of significant paleontologic resources or the impact of surface disturbing activities to such resources is assessed using the Potential Fossil Yield Classification (PFYC) system (BLM, 2016). This system includes eight classes of paleontological sensitivity, ranging from Class 5 (Very High) to Class 1 (Very Low), as well as Class U (Unknown Potential), Class W (Water) and Class I (Ice).

All research utilized in this analysis was conducted in accordance with the Society for Vertebrate Paleontology's (SVP, 1995), BLM Manual 8270 (General Procedural Guidance for Paleontological Resource Management), BLM Instruction Memorandum No. 2008-009 (Guidance for Implementing the Potential Fossil Yield Classification System) Instruction Memorandum No. 2009-011 (Guidelines for Assessment and Mitigation of Potential Impacts to Paleontological Resources), and BLM Instruction Memorandum No. 2016-124 (Potential Fossil Yield Classification System for Paleontological Resources on Public Lands) to determine whether any known paleontological resources exist in the general area and how they might be impacted by the Proposed Action and alternatives.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Sections 4.10.2 and 4.10.3). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.10.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. Four APMs are proposed for paleontology (APM-25 through APM-28); they are addressed in Section 4.10.4.

4.10.2 Direct and Indirect Effects

Most impacts on paleontological resources are direct impacts, resulting from ground disturbance activities that would damage or destroy resources. The result of resource recovery is scientific net gains in the discovery of previously unrecorded paleontological resources. Indirect impacts include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from larger numbers of people in the vicinity (i.e., personnel involved in construction and operation of project facilities). Areas with high potential for paleontological resources are evaluated for the amount, and type of disturbance and activities that would result in impacts to paleontological resources.

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The Project would consist of a 500 MW solar photovoltaic facility that will span over 3 solar fields on approximately 3,380 acres of public land administered by the BLM. In addition, a 230 kilovolt (kV) generation interconnection line (gen-tie line), and an operations and maintenance facility are also proposed for construction and operation at the project site. The gen-tie line would interconnect with the power grid at Southern California Edison's (SCE) Red Bluff Substation.

Much of the solar field would be impacted by soil disturbance during construction (see Figure 2-2, Appendix A). It is estimated that disturbance would occur at shallow (2-3 inch) to moderate depths (up to 16 feet) resulting from compaction, micro-grading, or disc-and-roll grading, and drilling activities. Any vegetation over 18 inches would be removed to avoid interaction with the solar panels. The trenches for the electrical cabling of the solar panels would be an estimated 3 feet deep and backfilled with excavation spoils. Additional soil disturbance during regular operation of the plant is not expected.

A permanent access road will be constructed of gravel and is estimated to be 1,490 feet long and 24 feet wide with a 12-foot-wide shoulder and 10-foot ditch on either side. All other internal access roads would be up to 24 feet wide and would be cleared and graded; north-south access roads would be covered with aggregate that is sifted from onsite soil or trucked in from a BLM-approved commercial mine. An up to 30-foot-wide perimeter road separating the solar arrays from the perimeter fence would be constructed within the entire perimeter of the Project. A new access road parallel to the gen-tie line would be constructed using a bulldozer or grader, and a roller to compact and smooth the ground. The gen-tie line access road is proposed to be up to 20 feet wide, and constructed as a compacted soil road.

Vegetation clearing and ground disturbance will be required at each transmission structure site to construct tower footings, including excavation of foundation holes, installation of reinforcing steel, and pouring of concrete. Temporary ground disturbance will occur at each structure location. Foundation excavations will be made using mechanized equipment, with the poles requiring one hole, 6 to 12 feet in diameter. Structure foundations will be excavated to a depth of up to 16 feet using a vehicle-mounted power auger or a backhoe. In rocky areas, the foundation holes would be excavated by drilling. Transmission tower foundations would be installed by placing reinforced steel

and transmission structure steel components into each foundation hole, positioning the steel components, and encasing them in concrete. Excess spoil material would be used for fill where suitable.

Up to 10 water wells will require excavation to a depth of approximately 10 feet.

Proposed Action: Direct Effects

Desktop studies and pedestrian survey in the project vicinity indicate there is some probability across the entire project area that sediments containing significant paleontological resources would be encountered during grading and excavation, including the gen-tie and access road construction area. As shown in Figure 4.10-1, the younger alluvium covers the entire solar field and most of the gen-tie route; it is called Quaternary younger alluvial and lacustrine sediments, known as Qya/Qal. The likelihood of encountering paleontological resources increases with depth. Disturbance of these soils below 3 feet would have increasing potential to encounter older Quaternary age alluvial soils. This formation is Class 4 (High) (BLM, 2016). Significant paleontological resources have been documented in this formation, but field efforts (Nials, 2013; SWCA, 2009) indicate they vary in occurrence and predictability. Detailed field assessment is normally required and on-site monitoring or spot-checking may be necessary during land disturbing activities.

Older Quaternary alluvial valley deposits (indicated as Qoa on geologic maps) exist at the surface along a small segment of the gen-tie route near the Red Bluff Substation. This geologic unit is Class 3 and has moderate sensitivity for containing significant paleontological resources (BLM, 2016). Desktop studies indicate this unit may contain significant paleontological resources, but these occurrences are widely scattered. Surface-disturbing activities that impact Class 3 units may require assessment by a qualified paleontologist to determine whether significant paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources.

As described above, construction of the Project would include grading, foundation and ditch excavation, utility trenching, and possibly drilled shafts. These activities could damage or destroy paleontological resources. The probability of encountering paleontological resources on the ground surface is considered low, but the probability increases substantially as depth increases. This conclusion is based on the soils profile, SVP assessment criteria, BLM PFYC (2016) guidelines, and the near-surface occurrence of the sensitive geologic units as reported by SWCA (2009). Excavation for ancillary facilities and on-site excavations that would penetrate surficial younger alluvium would have a higher probability of encountering Class 4 (High) sensitivity materials, although sensitive materials could occur nearer the surface. The probability of encountering Class 3 (Moderate) paleontological resources on the ground surface or subsurface in older units that are exposed at the surface only along the southwestern portion of the gen-tie and access road is relatively low, primarily because the disturbance in that area will be very small.

Mitigation Measure PAL-5 (Pedestrian Paleontological Survey) would ensure that the 431 acres that remain to be surveyed (see Figure 3.10-1, Paleontological Survey Coverage: Proposed Action) would be surveyed prior to the start of construction. The completed surveys would ensure that the site is properly mapped, which will ultimately ensure that fossils are identified, studied, and properly cared for.

Mitigation cannot ensure complete avoidance of all resources, or reduce all potential fossil disturbance associated with drilling or excavation. However, the volume of disturbance and probability of encountering fossil resources would be low for drilling and excavation activities that extend below 3 feet, as compared with grading. In grading and shallow excavation activities, the impacts of fossil disturbance and destruction would be reduced in severity through the implementation of MM PAL-1 through MM PAL-8 (full text of all mitigation measures is presented in Section 4.10.4). General topics of the measures are: MM PAL-1 (Paleontological Resources Specialist); MM PAL-2 (Materials for PRS and BLM Project Manager); MM PAL-3 (Paleontological Resources Monitoring and Mitigation Plan); MM PAL-4 (Approved Weekly Training Pertaining to Ground Disturbance); MM PAL-5 (Pedestrian Paleontological Survey); MM PAL-6 (Monitoring Activities); MM PAL-7 (Implementation of PRMMP); and MM PAL-8 (Paleontological Resources Report). These mitigation measures serve several purposes, including establishing qualification standards for paleontologists and setting in place a process to inform paleontologists about construction activities. The mitigation measures also provide a workers' educational program, and establish a monitoring program to record and report on any fossils identified during construction activities.

In addition, the value of paleontological resources is predicated on their discovery within a specific geological unit. Therefore, construction activities, and particularly excavation activities, could result in a beneficial addition of data to the science of paleontology. This is because construction activities uncover fossil resources, allowing what would not otherwise have been found to be recovered, identified, studied, and preserved. MM PAL-1, MM PAL-3, and MM PAL-5 through MM PAL-8 would ensure that any discoveries of significant paleontological fossils would be recorded, studied, and preserved pursuant to federal regulations governing paleontological resources (see Section 3.10 for a summary of regulations).

Since the depth to older sediments is unknown across the project area, mitigation is recommended requiring all sediments beneath disturbed ground initially to be treated as highly sensitive until a qualified paleontologist can determine an appropriate depth of sensitivity. MM PAL-1, MM PAL-3, and MM PAL-6 require that any excavations that penetrate below 3 feet of the existing ground surface should be treated as having high potential for impacting significant paleontological resources and would require monitoring. The 3-foot depth is based on observations of possible older alluvium being encountered in excavations completed for the geomorphic reconnaissance report. This report indicated that the depth would likely increase from the northern and southern boundaries towards the center of the project site (CEC, 2010).

With the implementation of MM PAL-1, MM PAL-3, MM PAL-5, MM PAL-6, and MM PAL-7, after monitoring of grading, trenching, and drilling activities during construction of the site, a qualified professional paleontologist may determine the appropriate depth above which the coarse and fine grained soils are Holocene in age, have a low sensitivity, and low potential for adverse impacts on paleontological resources. Even with the adoption of MM PAL-1 through MM PAL-8, the direct loss of significant paleontological resources may be unavoidable. However, impacts to sensitive fossil resources would be reduced in severity due to the scientific benefit resulting from discovery, recordation, study, and curation of significant fossil resources.

Operation, decommissioning, and closure of the Project would not adversely impact paleontological resources because the ground disturbed during these activities would have been disturbed already and impacts mitigated during construction of the Project.

Proposed Action: Indirect Effects

Indirect effects include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from the presence of larger numbers of people in the project vicinity during construction. Adoption of MM PAL-3 and MM PAL-4, in addition to fencing installed around the perimeter of the project facility, would minimize the potential for indirect impacts from solar facility construction to paleontological resources by limiting unauthorized access to the site, putting in place a monitoring program to ensure fossil identification and recording during construction, and providing an educational program to workers so that paleontological resources are avoided or reported to qualified professionals.

Alternative 1 – Reduced Footprint Alternative

This alternative avoids the central desert wash that crosses the Project southwest to northeast, and decreases the total solar field area to 3,100 acres. A total of 2,679 acres of this alternative have been surveyed for paleontological resources, while 373 acres remain to be surveyed. The alternative configuration would leave a gap of up to 2,300 feet surrounding the vegetated wash to allow for sheet flow through this area. Avoidance of the central desert wash decreases the area of disturbance to fossil resources that may be located in these areas. Like the Proposed Action, most of the solar field area has been assigned a Class 4-High sensitivity rating under the BLM PFYC (2016).

Although the area of direct impact is reduced in the Reduced Footprint Alternative, there remains a possibility that as-yet-unidentified significant paleontological resources could be adversely affected by construction activities. However, as with the Proposed Action, there would be a potential scientific benefit to acquiring paleontological data resulting from the study of fossil resources identified during construction and operations and maintenance activities with the implementation of MM PAL-1 (Paleontological Resources Specialist); MM PAL-2 (Materials for PRS and BLM Project Manager); MM PAL-3 (Paleontological Resources Monitoring and Mitigation Plan); MM PAL-4 (Approved Weekly Training Pertaining to Ground Disturbance); MM PAL-5 (Pedestrian Paleontological Survey); MM PAL-6 (Monitoring Activities); MM PAL-7 (Implementation of PRMMP); and MM PAL-8 (Paleontological Resources Report). The implementation of these measures would reduce the potential severity of adverse impacts from solar facility construction to paleontological resources under the Reduced Footprint Alternative.

Indirect effects include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from increased numbers of people in the vicinity. Project construction would increase the number of personnel in the project area, although adoption of MM PAL-3 and MM PAL-4 would minimize the potential for indirect impacts from solar facility construction to paleontological resources.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would limit the Project's size based on DRECP Conservation Management Actions (CMAs). The area encompassed by desert dry wash woodland and a 200-foot buffer would be removed from development. The resulting area of development would be reduced to 1,620 acres. A total of 1,473 acres of this alternative have been surveyed for paleontological resources, while 313 acres remain to be surveyed. The types of construction and operations and maintenance activities would be the same as with the Proposed Action, and the Avoidance Alternative would be constructed within the same overall boundary, using the same type of photovoltaic panels.

The direct effects of this alternative would be similar to those described for the Proposed Action. The reduced disturbance area would avoid a substantial amount of ground disturbance in sensitive younger soils in the middle of the project area. It would have the same potential as the Proposed Action to cause adverse impacts to the moderately sensitive older formation located near the Red Bluff Substation. Overall the Avoidance Alternative reduces the area of potential impact, both adverse (e.g., displacement or destruction of resources) and beneficial (e.g., scientific knowledge gained) for potential paleontological resources. However, the Avoidance Alternative would still have the potential to cause adverse unavoidable loss of resources in areas of project construction. Through the implementation of MM PAL-1 through MM PAL-8, damage or loss of paleontological resources would be minimized; these measures would put into place a monitoring program that would allow qualified professionals to record and study fossil resources discovered during construction activities. The resulting scientific knowledge would have long-term benefits for the scientific community and greater public.

With the Avoidance Alternative, indirect effects would include the potential for increased unauthorized collection of fossils and other paleontological resources resulting from an increased number of people in the vicinity during construction. Implementation of MM PAL-3 and MM PAL-4 would reduce the likelihood of indirect impacts from solar facility construction to paleontological resources. These mitigation measures would establish a paleontological monitoring program that would ensure discoveries of fossils and other sensitive paleontological resources are recorded properly. The mitigation measures would also provide a workers' educational program that would raise awareness of paleontological resources, as well as knowledge about how to report them to qualified professionals onsite.

No Action Alternative

The No Action Alternative would result in the denial of the ROW application CACA-48810; no ROW grant would be authorized. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.10.3 Cumulative Effects

Geographic Scope

Cumulative analysis of paleontological resources relies upon a geographic area that has been identified by BLM as covering an area large enough to provide a reasonable basis for evaluating cumulative impacts resulting from solar and other development projects near the project area. For the purposes of the cumulative analysis, the area of study is focused on the I-10 Corridor from Blythe to Desert Center, in Eastern Riverside County. Projects occurring within this area are presented in Tables 4.1-1 and 4.1-2. These projects (e.g., Rio Mesa, McCoy, Genesis solar projects) would occur within the same Holocene, Pleistocene and dry wash sediments as the Proposed Action. These geologic units are ubiquitous across the I-10 Corridor and are the Palen Solar Project is likely to contribute to cumulative effects, both adverse and beneficial, to paleontological resources.

Cumulative Impact Analysis

Potential cumulative impacts to paleontology include cumulative loss of scientifically significant resources at both known and as-yet-undiscovered fossil localities. Discovery of scientifically significant fossil localities could occur anywhere within the I-10 corridor or Eastern Riverside County region. Fossil localities that could potentially produce significant vertebrate fossils are rare and unevenly distributed through geological formations throughout the I-10 corridor. Nearby solar projects completed in the past have resulted in the identification of fossil localities yielding significant paleontological resources, although most fossil occurrences have been recorded as non-significant (SWCA, 2009). Nevertheless, sediments with a PFYC of Class 4–High and Class 5–Very High may preserve rare and scientifically significant remains of species not yet known to science or more complete specimens of known species. The cumulative loss of paleontological resources from these localities would be significant. This is because the possibility for scientific study is permanently lost when a fossil locality or significant fossil find is destroyed or buried during construction activity.

Construction activities associated with the Proposed Action in combination with other projects along the I-10 corridor and Eastern Riverside County could contribute to the progressive loss of sensitive paleontological resources. However, with the implementation of MM PAL-1 through MM PAL-8, the Proposed Action would either avoid nearly all impacts to fossil resources, or would result in the recovery of important scientific information. Mitigation plans for any foreseeable projects would require federal standards of professional qualification for paleontologists, and monitoring plans that ensure rigorous study of fossil finds would be beneficial to paleontological resources. Overall, if significant fossils are uncovered and appropriately documented and curated during construction of these major infrastructure projects, there could be an overall net gain to the science of paleontology by allowing fossils that would not otherwise have been found to be recovered, identified, studied, and preserved.

The loss of significant fossil resources combined with impacts from other projects over time could result in cumulative adverse impacts; however, the impacts would be very minor and would not outweigh the positive impacts associated with scientific study of paleontological resources. Construction associated with past, present and future projects are likely to add to fossil discoveries

that would enhance our understanding of the prehistoric climate, geology, and geographic setting of the region for the benefit of current and future generations.

4.10.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are four APMs relevant to paleontological resources (Section 2.2.7, Chapter 2). Table 4.10-1 explains how these measures reduce project effects, and how they relate to mitigation measures recommended below.

Table 4.10-1. Applicant Proposed Measures for Paleontological Resources

APM #	Text	Explanation
APM-25	If not previously available, prepare paleontological sensitivity maps consistent with the Potential Fossil Yield Classification for activities prior to NEPA analysis.	APM-25 is superseded by MM PAL-3 and MM PAL-5, which includes the preparation of paleontological sensitivity maps and weekly discussion of those data in relation to planned construction work.
APM-26	Incorporate all guidance provided by the Paleontological Resources Protection Act and final DOI PRPA rules.	APM-25 is superseded by MM PAL-1 through MM PAL-8, which ensure full compliance with existing and proposed DOI changes to the Paleontological Resources Protection Act.
APM-27	Ensure proper data recovery of significant paleontological resources where adverse impacts cannot be avoided or otherwise mitigated.	APM-27 is superseded by MM PAL-1, MM PAL-3, and MM PAL-5 through MM PAL-8, which collectively ensure proper data recovery of significant paleontological resources in the event that adverse impacts cannot be avoided or otherwise mitigated.
APM-28	Paleontological surveys in PFYC 3, 4, 5, and Unknown areas, and construction monitors in potential PFYC 4 and 5 areas, are required for ground disturbing activities that require an EIS.	APM-28 is superseded by MM PAL-1 through MM PAL-2, and MM PAL-5 through MM PAL-8, which set forth the requirements for paleontological surveys and construction monitors that are required for ground disturbing activities that would affect significant paleontological resources as defined in the NEPA.

The Project and the alternatives will impact the same strata and require a similar level of effort. Mitigation Measures PAL-1 through PAL-8 would successfully mitigate the impacts to paleontological resources in compliance with the guidelines set forth in the CEQA, NEPA, SVP (1995), and BLM Paleontological Resources Management 8270 Manual (2008, 2016). These measures are based upon the paleontological resources mitigation measures from PSPP, but they have been revised to account for differences between the Proposed Action and PSPP and reflect the roles of the lead agencies.

PAL-1 **Paleontological Resources Specialist (PRS).** (Previously PSPP MM PAL-1) Prior to the issuance of a Notice to Proceed by BLM, a qualified paleontologist approved by the BLM to serve as Project Paleontologist shall be retained by the project owner. This individual shall retain a BLM paleontological resource use permit for the project and a paleontological permit from the County of Riverside. To do so, this individual shall have the following qualifications as stipulated in BLM Manual 8270-1 Chapter IV:

1. Professional instruction in a field of paleontology relevant to the work proposed (vertebrate, invertebrate, trace, paleobotany, etc.), obtained through:

a. Formal education resulting in a graduate degree from an accredited institution in paleontology, or in geology, biology, botany, zoology or anthropology if the major emphasis is in paleontology; OR

b. Equivalent paleontological training and experience including at least 24 months under the guidance of a professional paleontologist who meets qualification above that provided increased responsibility leading to professional duties similar to those in qualification above; and

2. Demonstrated experience in collecting, analyzing, and reporting paleontological data, similar to the type and scope of work proposed in the application;

3. Demonstrated experience in planning, equipping, staffing, organizing, and supervising crews performing the work proposed in the application;

4. Demonstrated experience in carrying paleontological projects to completion as evidenced by timely completion and/or publication of theses, research reports, scientific papers and similar documents.

The project owner shall provide the BLM Project Manager with the resume and qualifications of its paleontological resource specialist (PRS) for review and approval. The PRS resume shall include the names and phone numbers of references. The resume shall also demonstrate to the satisfaction of the BLM Project Manager the appropriate education and experience to accomplish the required paleontological resource tasks. If the approved PRS is replaced prior to completion of project mitigation and submittal of the Paleontological Resources Report, the project owner shall obtain BLM Project Manager approval of the replacement PRS.

As described in BLM IM 2009-011, the Project Paleontologist will serve as the Principal Investigator (PI) under the BLM permit and is responsible for all actions under the permit, for meeting all permit terms and conditions, and for the performance of all other personnel. This person is also the contact person for the project proponent and the BLM.

Additional Paleontological Staff – The Project Paleontologist may obtain the services of Paleontological Field Agents, Field Monitors, and Field Assistants, if needed, to assist in mitigation, monitoring, and curation activities. These individuals must meet the qualifications as stipulated in BLM Manual 8270 1 Chapter IV and BLM IM 2009-011, and their resumes must be reviewed and approved by BLM as part of the BLM paleontological resource use permit process.

PAL-2 **Materials for PRS and BLM Project Manager.** (Previously PSPP MM PAL-2) The project owner shall provide to the PRS and the BLM Project Manager, for approval, maps and drawings showing the footprint of the power plant, construction lay-down areas, and all related facilities. Maps shall identify all areas of the Project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and BLM Project Manager. The site grading plan, and plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings should

show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet and 1 inch = 100 feet. If the footprint of the Project or its linear facilities changes, the project owner shall provide maps and drawings reflecting those changes to the PRS and BLM Project Manager.

If construction of the Project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and BLM Project Manager. Before work commences on affected phases, the project owner shall notify the PRS and BLM Project Manager of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent or construction field manager to confirm area(s) to be worked the following week and until ground disturbance is completed.

PAL-3 **Paleontological Resources Monitoring and Mitigation Plan (PRMMP).** (Previously PSPP MM PAL-3) Prior to the issuance of a Notice to Proceed by BLM, the PRS shall submit a Paleontological Resources Mitigation and Monitoring Plan (PRMMP) for the Project to the BLM for review and approval. The appropriate Paleontology Lead or Regional Paleontologist shall review the plan for sufficiency prior to acceptance. Approval of the PRMMP by the BLM Project Manager shall occur prior to any ground disturbance.

The PRMMP shall be prepared and implemented under the direction of the Project Paleontologist and shall address and incorporate **MM PAL-1** through **MM PAL-8.** The PRMMP shall be prepared at the sole expense of the project proponent, and meet all current BLM and Riverside County regulatory requirements, including BLM 8270 manual and handbook, BLM IM No. 2009-011 Assessment and Mitigation of Potential Impacts to Paleontological Resources, and BLM IM No. 2016-124 Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands. The PRMMP shall also comply with the Paleontological Resources Protection Act and final DOI PRPA rules.

The PRMMP shall function as the formal guide for survey, monitoring, collecting, and sampling activities and may be modified with BLM Project Manager approval. This document shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall reside with the PRS, each monitor, the project owner's on-site manager, and the BLM Project Manager.

A monitoring plan indicates the avoidance or treatments recommended for the area of the proposed disturbance and must minimally address the following:

1. The design of a PFYC assessment and pedestrian paleontological survey (**MM PAL-5**) for any as-of-yet unsurveyed Project areas with PFYC 3, 4, 5, or unknown classification, the results of which will be used to map impact areas affecting geologic units with moderate to high sensitivity that will require monitoring or spot-checking during construction;

2. A coordination strategy to ensure that a qualified paleontologist (**MM PAL-1**) will conduct paleontological survey and monitoring at the appropriate locations at the appropriate intensity;
3. The significance criteria to be used to determine which resources will be avoided or recovered for their data potential;
4. Procedures for the discovery, recovery, preparation, and analysis of paleontological resources encountered during construction, in accordance with standards for recovery established by the SVP and the BLM;
5. Provisions for verification that the project proponent has an agreement with a recognized museum repository, for the disposition of recovered fossils and that the fossils shall be prepared prior to submittal to the repository as required by the repository (e.g., prepared, analyzed at a laboratory, curated, or cataloged);
6. Specifications that all paleontological work undertaken by the project proponent on public land shall be carried out by qualified paleontologists with appropriate current permits (**MM PAL-1**), including but not limited to a Paleontological Resources Use Permit (for work on public lands administered by BLM) and a Riverside County permit (for work on lands administered by the County of Riverside);
7. Description of monitoring reports that will be prepared which shall include daily logs, monthly reports, and a final monitoring report with an itemized list of specimens found to be submitted to the BLM, the Riverside County Planning Department, the project proponent and the designated repository within 90 days of the completion of monitoring;
8. The implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project shall be specified; and
9. Person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team shall be identified.
10. All impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to sensitive resource areas that are to be avoided during ground disturbance, construction, and/or operation shall be described. Any areas where these measures are to be implemented shall be identified. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related impacts.

PAL-4 **Approved Weekly Training Pertaining to Ground Disturbance.** (Previously PSPP MM PAL-4) Prior to ground disturbance and for the duration of construction activities involving ground disturbance, the project owner and the PRS shall prepare and conduct weekly BLM Project Manager-approved training for the following workers: project managers, construction supervisors, foremen, and general workers involved with or who operate ground-disturbing equipment or

tools. Workers shall not excavate in sensitive units prior to receiving BLM Project Manager-approved worker training. Worker training shall consist of an initial in-person PRS training or may utilize a BLM Project Manager-approved video or other presentation format during the project kickoff for those mentioned above. Following initial training, a BLM Project Manager-approved video or other approved training presentation/materials, or in-person training may be used for new employees. The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. No ground disturbance shall occur prior to BLM Project Manager-approval of the Worker Environmental Awareness Program (WEAP), unless specifically approved by the BLM Project Manager. The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources.

The training shall include:

1. A discussion of applicable laws and penalties under the law;
2. Good quality photographs or physical examples of vertebrate fossils for project sites containing units of high paleontologic sensitivity;
3. Information that the PRS or PRM has the authority to halt or redirect construction in the event of a discovery or unanticipated impact to a paleontological resource;
4. Instruction that employees are to halt or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM;
5. An informational brochure that identifies reporting procedures in the event of a discovery;
6. A WEAP certification of completion form signed by each worker indicating that he/she has received the training; and
7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

PAL-5 **Pedestrian Paleontological Survey.** Prior to the issuance of a Notice to Proceed by BLM, the project owner shall ensure completion of a pedestrian paleontological survey (PPS), as described in the PRMMP prepared by the PRS and approved by the BLM Project Manager (**MM PAL-3**). The PPS shall be completed at the sole expense of the project proponent, and meet all current BLM and Riverside County regulatory requirements, including BLM 8270 manual and handbook, BLM IM No. 2009-011 Assessment and Mitigation of Potential Impacts to Paleontological Resources, and BLM IM No. 2016-124 Potential Fossil Yield Classification (PFYC) System for Paleontological Resources on Public Lands. The PPS shall also comply with the Paleontological Resources Protection Act and final DOI PRPA rules. The PRS shall oversee and implement the BLM-approved PPS, which shall include a PFYC assessment and survey for any as-of-yet unsurveyed Project areas with PFYC 3, 4, 5, or unknown classifications. The results of the PPS shall be used

to map impact areas affecting geologic units with moderate to high sensitivity that will require monitoring or spot-checking during construction. Final results of the PPS shall be included in the PRR (**MM PAL-8**).

PAL-6 **Paleontological Monitoring Activities.** The project owner shall ensure that the PRS and PRM(s) monitor consistent with the PRMMP in all construction-related grading, excavation, trenching, and augering in areas where potential fossil-bearing materials have been identified, both at the site and along any constructed linear facilities associated with the Project. In the event that the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil bearing in the PRMMP, the project owner shall notify and seek the concurrence of the BLM Project Manager. The project owner shall ensure that the PRS and PRM(s) have the authority to halt or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

1. Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the BLM Project Manager prior to the change in monitoring and will be included in the monthly compliance report. The letter or email shall include the justification for the change in monitoring and be submitted to the BLM Project Manager for review and approval.
2. The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the BLM Project Manager at any time.
3. The project owner shall ensure that the PRS notifies the BLM Project Manager within 24 hours of the occurrence of any incidents of non-compliance. The PRS shall recommend corrective action to resolve the issues.
4. For any significant paleontological resources encountered, either the project owner or the PRS shall notify the BLM Project Manager within 24 hours, or Monday morning in the case of a weekend event, where construction has been halted because of a paleontological find. The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities placed in the monthly compliance reports. The summary will include the name(s) of PRS or PRM(s) active during the month; general descriptions of training and monitored construction activities; and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils. A final section of the report will address any issues or concerns about the Project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the monitoring plan that have been approved by the BLM Project Manager. If no monitoring

took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

PAL-7 **Implementation of PRMMP.** (Previously PSPP MM PAL-6) The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed including completion of the PPS, collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, the preparation of fossils for curation, and the delivery for curation of all significant paleontological resource materials encountered and collected during PPS and project construction.

PAL-8 **Paleontological Resources Report (PRR).** (Previously PSPP MM PAL-7) The project owner shall ensure preparation of a Paleontological Resources Report (PRR) by the designated PRS. The PRR shall be prepared following completion of pedestrian survey and ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and submit it to the BLM Project Manager for review and approval. The report shall include, but is not limited to determinations of sensitivity and significance; a description and inventory of recovered fossil materials; a map showing the location of paleontological resources encountered; and a statement by the PRS that project impacts to paleontological resources have been mitigated below the level of significance. At a minimum the final report must include the following details as specified by BLM IM 2009-011:

1. Name, affiliation, address, date of report, and permit number (if consultant) of the paleontologist doing the survey.
2. Project name and number (if used), name of proponent, and general location of project.
3. Date(s) of the survey and names of any personnel assisting with the survey.
4. Brief description of project and expected impacts to paleontological resources.
5. A summary of mitigation performed.
6. A summary of findings, including important discoveries.
7. A description of potentially fossiliferous areas to allow for future assessment of sites, even if no fossils were located during the project monitoring.
8. A completed BLM locality form 8270-3 or equivalent for each new locality using Universal Transverse Mercator (UTM) NAD 83 coordinates, and 1:24000 scale maps with new localities plotted using points or polygons as appropriate. Locality forms, maps, and any other information containing specific fossil locations should be bound separately or assembled as a separate section to allow for preservation of confidential locality data.
9. List of specimen field numbers and field identifications of collected material, cross-referenced to the locality field number.

4.10.5 Residual Effects after Implementation of Mitigation Measures

Unavoidable adverse impacts to paleontological resources could occur after mitigation measures were implemented because resources could be destroyed or dislocated during construction. However, implementation of mitigation measures (MM PAL-1 through MM PAL-8) would minimize these impacts because they would ensure that destruction would not occur, or would occur alongside an appropriate program of study. Mitigation measures would also result in a beneficial increase in knowledge related to the science of paleontology. Fossils that would not otherwise have been found would be recovered, identified, studied, and preserved. The information gained from these discoveries would further scientific knowledge of the nature and depths of subsurface geological units in the region. This expansion of knowledge would also benefit society because fossils would be stored at museums for educational use.

4.10.6 Unavoidable Adverse Impacts

The dislocation or destruction of paleontological resources could occur, even after all mitigation measures are implemented. However, construction-related ground disturbance could yield fossil discoveries that would enhance human understanding of the prehistoric climate, geology, and geographic setting of the region for the benefit of current and future generations. Mitigation measures (MM PAL-1 through MM PAL-2) would minimize these impacts by putting in place an effective monitoring program that would reduce the occurrence of destruction and dislocation, as well as ensure that scientific study of paleontological resources is completed.

4.10.7 CEQA Significance Thresholds and Determinations

In accordance with Appendix G to the State CEQA Guidelines, paleontological impacts would be considered significant if the Proposed Action would:

P-1 Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

P-1 Destroy a Unique Paleontological Resource or Site or Geologic Feature

The direct and indirect impacts of Project construction, operations and maintenance, and decommissioning are similar for the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative. These impacts would be significant under criterion P-1 because of the likelihood of directly or indirectly destroying unique paleontological resources, sites, or features.

As presented in Figure 4.10-1, the entire solar field, gen-tie and access roads for the Proposed Action and all alternatives consist of Class 4-High sensitivity sediments known as Quaternary younger alluvial and lacustrine sediments (Qya/Qal). The sensitivity of the Quaternary younger sediment increases with depth. In addition, Class 3-Moderate sensitivity sediments known as Older Quaternary alluvial valley deposits (Qoa) exist at the ground surface within the gen-tie route near the Red Bluff Substation. However, recent paleontological surveys conducted in Quaternary younger alluvial and lacustrine sediments identified several non-significant fossil occurrences (SWCA, 2009). Therefore, destruction of significant fossil localities across the project area and alternative project areas is not anticipated because no significant fossil occurrences have been recorded in Project area sediments.

Direct impacts consisting of the destruction of paleontological resources would result from construction activities such as grading, foundation and ditch excavation, utility trenching, and possibly drilled shafts. The Proposed Action would grade only a percentage of the project as the construction methods would use site preparation techniques to minimize the volume of earth movement such as disc and roll. Indirect impacts would consist of an increase in pedestrian traffic and potentially a related increase in unauthorized collection of fossil remains. Through the implementation of MM PAL-1 (Paleontological Resources Specialist); MM PAL-2 (Materials for PRS and BLM Project Manager); MM PAL-3 (Paleontological Resources Monitoring and Mitigation Plan); MM PAL-4 (Approved Weekly Training Pertaining to Ground Disturbance); MM PAL-5 (Pedestrian Paleontological Survey); MM PAL-6 (Paleontological Monitoring Activities); MM PAL-7 (Implementation of PRMMP); and MM PAL-8 (Paleontological Resources Report), the destruction of resources would be mitigated to a less than significant level under CEQA. The mitigation measures put in place procedures that ensure the presence of qualified paleontologists who have access to updated construction plans, as well as monitoring, training, and reporting requirements during construction. These reporting requirements result in the potential for qualified paleontologists to immediately halt construction work to identify, record, and study paleontological resources discovered during construction. They also ensure that any significant fossil discoveries will be deposited in a qualified repository or museum, where they can be further studied. Therefore, Mitigation Measures PAL-1 through PAL-8 would remove most, but not all possibility of direct or indirect destruction of significant paleontological resources. However, the positive benefits to the scientific community and society outweighs the risk of destruction, particularly in light of evidence suggesting few to no significant fossil localities would be encountered during construction. With implementation of the mitigation measures, the impact would be less than significant.

No Action Alternative. Under the No Action Alternative, the Palen Solar Project would not be built; therefore, impacts related to the destruction of paleontological resources would not occur. However, the beneficial impact resulting from the production of new scientific knowledge related to the discovery and study of paleontological fossil resources of the project area would also not occur.

Cumulative Impacts

As described in Section 4.10.3, the effects of construction and operation of the Proposed Action would combine with impacts from past, present, and reasonably foreseeable projects within eastern Riverside county to result in significant cumulative impacts to paleontological resources. Without the implementation of mitigation described in Section 4.10.4, the incremental contribution of the Proposed Action to the significant cumulative impact would be cumulatively considerable.

However, cumulative impacts to paleontological resources from the Projects would be addressed through Mitigation Measures PAL-1 through PAL-7. These mitigation measures would put into place an effective monitoring program, and provide educational training to workers that would lower the frequency of unauthorized fossil collection and promote rapid reporting of fossil finds to qualified professionals. Mitigation measures would also successfully recorded important fossil-bearing sediments and provide permanent curation of scientifically significant fossils. This would make possible the future protection, avoidance, or studies of other as-yet-unidentified paleontological resources. With implementation of the mitigation measures, the contribution of the Proposed Action to significant paleontological cumulative impacts would be less than cumulatively considerable.

4.11 Public Health and Safety

4.11.1 Impact Assessment Methodology

This analysis considers whether the construction and operation of the Proposed Action could affect public health and safety as a result of the use, handling, transportation, or storage of hazardous materials, waste management of the Project, the potential to encounter unexploded ordnances (UXO), transmission line safety and nuisance, worker safety from aviation noise, fire hazards, and geologic hazards from project implementation. The analysis is focused on the changes from baseline conditions should the Project be implemented.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.11.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.11.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. Three APMs are proposed for public health and safety (APM-29, APM-30, and APM-43) and are considered in the evaluation of impacts.

4.11.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action: Direct Effects

Hazardous Materials

As presented in Section 2.2.7 (Applicant Proposed Measures Included in the Proposed Action), design features have been incorporated as part of the Project to reduce or eliminate potential significant impacts. The following are APMs that would be incorporated as part of the Proposed Action related to reducing potential impacts from use of hazardous materials and potential spill response.

- **APM-29:** In addition to the applicable required governmental safeguards, implement up-to-date standard industry construction practices to prevent toxic substances from leaching into the soil.
- **APM-30:** Prepare an emergency response plan, approved by the BLM contaminant remediation specialist, that ensures rapid response in the event of spills of toxic substances over soils.

The Proposed Action would not mobilize existing contaminants in groundwater or soil, or expose workers to contaminated or hazardous materials at levels in excess of those permitted by federal and state law. There are no known previously contaminated sites of concern located in the project study area. If unanticipated contaminated soil is encountered, WASTE-2 would reduce the effects by requiring a Professional Engineer or Geologist to oversee the earth-moving activities and WASTE-3 would require inspection and reporting of potentially contaminated soil.

During the construction phase of the Proposed Action, hazardous materials likely used include paint, solvents, gasoline, diesel fuel, motor oil, lubricants, and welding gases. During construction, existing commercial ready-mix concrete supply would be used where feasible. If unavailable, a temporary, two-acre concrete batch plant would be installed in the construction laydown area. A concrete batch plant for the construction phase would require the use of some additional hazardous materials, such as fly ash and calcium chloride.

No acutely toxic hazardous materials would be used on site during construction, and none of the materials identified above would pose a significant potential for off-site contamination. This is because of the limited quantities stored on site, and the relative toxicity of the materials, their physical state, and/or their environmental mobility. Additionally, Best Management Practices such as temporary containment berms used by contractors would further reduce the potential for spills and other releases to exit the site. To ensure delivery, storage, and use of hazardous materials during the temporary construction period does not lead to adverse impacts or public health hazards, Mitigation Measures HAZ-1 Hazardous Material Requirements), HAZ-2 (Hazardous Materials Management Plans), and HAZ-3 (Safety Management Plan), and WASTE-9 (accidental spills) are recommended to control the use and storage of hazardous materials, control the disposal of contaminated soils, as well as develop spill prevention and clean up protocols. WORKER SAFETY-3 would require a Construction Safety Supervisor who would oversee all potential workplace hazards related to the construction activities. With the incorporation of APMs and mitigation measures, the temporary use of hazardous materials and potential spills would not substantially contribute to public health effects.

During operations, hazardous chemicals such as cleaning agents, water treatment chemicals, welding gasses, oils, and other various chemicals would be used and stored in small amounts on-site. The use and storage of these materials would comply with all applicable regulations. The use and storage of such small quantities of on-site hazardous materials is not anticipated to pose any hazard to the public.

In order to control weeds during construction and operations, the Proposed Action would utilize BLM-approved herbicides, such as glyphosate, as appropriate. As described in Chapter 1, the Supplemental EIS is tiered to the BLM's 2007 Vegetation Treatments Using Herbicide Programmatic Final Environmental Impact Statement (Herbicide PFEIS). Only application methods addressed in the Herbicide PFEIS would be used and all use would be in accordance with U.S. EPA label instructions and would be overseen by a certified herbicide applicator. Mitigation Measure HAZ-4 (use licensed herbicide applicator) includes specific guidelines for herbicide applicators and herbicide application. By complying with the measures and standard operating procedures in the Herbicide PFEIS and Mitigation Measure HAZ-4, the use of herbicides for the Proposed Action would not adversely affect public health and safety.

Waste Management

Construction activities are estimated to generate non-hazardous waste (i.e., scrap wood, concrete, steel, glass, plastic, paper, insulating materials, aluminum, and food waste). Operation of the Project is estimated to generate minimal non-hazardous waste (primarily food waste and other trash from operational staff). For all non-hazardous waste, recyclable materials would be separated and removed to recycling facilities; non-recyclable materials would be disposed of at a Class III

landfill. There are at least seven Class III landfill facilities located in the project vicinity which provide sufficient capacity to handle the Project's construction and operation non-hazardous wastes over the life of the Project.

Hazardous wastes generated during construction, operation and closure/decommissioning would be recycled to the extent possible and practical. Staging yards, refueling areas, and chemical storage areas, if needed, will be located in upland areas that do not slope to sensitive resources. Liquids will be stored in secured areas (fenced or locked building). Storage containers will be properly labeled to indicate the contents of the container. The accumulated wastes would then be properly manifested, transported, and disposed of at a permitted hazardous waste management facility by licensed hazardous waste collection and disposal firms in accordance with applicable regulations and standards. Hazardous wastes would likely be transported to one of two available Class I waste facilities: Clean Harbors Buttonwillow Landfill in Kern County and Chemical Waste Management Kettleman Hills Landfill in Kings County. The Kettleman Hills facility also accepts Class II and III waste. There is sufficient remaining capacity at these facilities to handle the Project's hazardous wastes during its operating lifetime. In addition to the Class I landfills, there are several commercial liquid hazardous waste treatment and recycling facilities in California that can process project-related hazardous wastes.

The Project may use a variety of PV technologies including, but not limited to crystalline silicon panels or copper indium gallium selenide panels. None of the panels being considered contain materials that are classified as hazardous wastes because the chemicals within PV modules are highly stable and would not be available for release to and interaction with the environment. If a panel is broken, the pieces would be cleaned up completely and returned to the manufacturer for recycling. EDF RE has multiple existing panel contracts, which require manufacturers to collect and recycle any broken or malfunctioning panels.

To ensure all waste generated during project construction and operation have no adverse effects to the public, Mitigation Measures WASTE-6 (Construction Waste Management Plan) and WASTE-7 (Operation Waste Management Plan), are proposed to ensure the proper handling and disposal of non-hazardous and hazardous wastes.

Unexploded Ordnance (UXO)

During construction, maintenance, and closure and decommissioning activities associated with the Proposed Action, land disturbance activities could unearth unexploded World War II-era and more recent vintage munitions, including conventional and unconventional land mines, personnel mines, and bullets, the detonation of which would pose a safety risk to the construction workers. For example, surface and shallow sub-surface UXO could be disturbed by vehicles, walkers, and excavation using shovels or similar hand tools, and deeper sub-surface UXO could be disturbed by the earth movement and excavation processes that would be required for development of the Proposed Action.

Due to the proximity of the project site to Palen Pass and the historic World War II training camps, and the potential for UXO to be present in the study area, the Applicant plans to conduct pre-construction UXO surveys. Implementation of proposed Mitigation Measures WASTE-1, would formalize UXO training, investigation, removal, and disposal.

Transmission Line Safety and Nuisance

The proposed transmission interconnection line would be designed, built, and maintained in keeping with standard practices that minimize surface irregularities, surface discontinuities, and related corona discharge. Since the proposed transmission line would traverse an uninhabited open space, it would not interfere with modern digital airport-related communications and no interference with radio-frequency communication would occur.

Solar panels do not emit electromagnetic waves over distances that could interfere with radar signal transmissions, and any electrical facilities that do carry concentrated current would be buried beneath the ground and away from any signal transmission. The EMF fields for newly designed transmission lines are required to be similar to other lines in that service area. While health hazards related to EMF exposure have not been established from the available evidence, the absence of such evidence does not serve as proof of a definite lack of a hazard. Since the proposed transmission line would traverse an uninhabited open space, there are no known habitable structures or residences proximate to the proposed transmission line that could be subject to EMF exposure.

Aviation Noise Safety

The Desert Center Airport is located approximately 5 miles northwest of the main project site; it is used an average of approximately 12 times a month. The Proposed Action does not include the construction of any housing or habitable structures. During the construction and operational phase, personnel would be on-site during the majority of the hours of operation. However, due to the limited use of the Desert Center Airport and the distance from the project site, the Project would not result in a safety hazard for people working in the project area.

Fire Hazards

As presented in Section 2.2.7 (Applicant Proposed Measures Included in the Proposed Action), design features have been incorporated as part of the Project to reduce or eliminate potential significant impacts. The following are APMs that would be incorporated as part of the Proposed Action related to reducing potential fire hazard impacts.

- **APM-43**: Implement site-specific fire prevention/protection actions particular to the construction and operation of the Project that include procedures for reducing fires while minimizing the necessary amount of vegetation clearing, fuel modification, and other construction-related activities. At a minimum these actions will include designating site fire coordinators, providing adequate fire suppression equipment (including in vehicles), and establishing emergency response information relevant to the construction site.

During construction, potential causes of wildfire include construction equipment use including exhaust sparks, hot exhaust manifolds and pipes, fuel leaks, overheating, track and blade sparks, short circuits, brakes, belts and pulleys, accumulated debris, and broken hydraulic line spilling on hot engine parts. Once operational, fire hazards are very limited for a solar PV facility. Potential fire hazards from the proposed transmission line would be caused by sparks from conductors of overhead lines, or could result from direct contact between the line and nearby trees and other combustible objects.

In the event of a fire, the Proposed Action could require response or assistance from the Riverside County Fire Department (RCFD) and from BLM because the Project is located within BLM Direct Protection Area. The two closest RCFD stations that would respond to an incident at the Project are located off of I-10 approximately 10 miles west. The Lake Tamarisk Station (#49) is located at 43880 Lake Tamarisk in Desert Center and the Terra Lago Station (#87) is located at 42900 Golf Center Parkway in Indio. The Federal response for fire could include five Type III engines, a Chief Officer, and a Fire Investigator.

Development of the Proposed Action would be subject to requirements of the BLM and RCFD, including access requirements. Standard fire prevention and suppression measures for similar SCE lines would be implemented for the proposed line. Additionally, potential fire hazards would be addressed through compliance with applicable laws, ordinances, regulations, and standards pertaining to equipment use and flammable material storage. Standard fire prevention and suppression measures for similar SCE lines would be implemented for the proposed line. Additionally, potential fire hazards would be addressed through compliance with applicable laws, ordinances, regulations, and standards.

In addition to APM-43 described above, Mitigation Measure WORKER SAFETY-7 ensures the Applicant would provide financial compensation as part of the Project to fund capital improvements and staffing for the RCFD and BLM. The Applicant would coordinate with the RCFD and BLM to establish the level of fire-related risk that would be associated with the Project and to determine the appropriate level of response capability commensurate with that risk and consistent with applicable safety regulations. Based on this planning and coordination, the Proposed Action would not be expected to cause access-related difficulties for the RCFD or BLM or adversely affect its response capability.

Geologic Hazards

Several laws and policies impose stringent seismic safety requirements on the design and construction of new structures. It is possible that groundshaking could cause the failure of proposed structures. While ground-shaking at the site would not constitute a major effect, mitigation should be implemented to the extent practical through structural designs consistent with the California Building Code and the site-specific geotechnical report that would be required for the Project to minimize risks associated with severe ground-shaking.

The potential for and mitigation of the effects of earthquake-induced settlement of site soils during an earthquake (liquefaction), the effects of hydrocompaction of site soils, and the effects of corrosive soils would be addressed in a project-specific geotechnical report. This is a requirement of proposed Mitigation Measure GEO-1. Common mitigation methods include deep foundations (driven piles; drilled shafts) for severe conditions, geogrid-reinforced fill pads for moderate severity and over-excavation and replacement for areas of minimal hazard.

The preliminary stages of construction, especially site grading, excavation, and soil stockpiling would leave loose soil exposed to the erosive forces of rainfall and high winds. Should substantial erosion occur, the foundations of project components could become unstable and collapse creating a potential hazard to public health and safety. However, soil erosion could be mitigated effectively through final design by incorporating the recommendations of a site-specific geotechnical report and compliance with applicable law, ordinances, rules, and standards.

Proposed Action: Indirect Effects

The Proposed Action would have no indirect effects or indirectly result in public health or safety hazards that could cause an adverse impact.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would be constructed within the same project boundary as the Proposed Action but would eliminate project development on the central desert wash that crosses the site from southwest to northeast. Because a 500 MW project would be constructed (with the solar array redesigned to avoid developing within the central desert wash), Alternative 1 would result in similar or identical effects related to hazardous materials, waste management, UXO, transmission line safety and nuisance, aviation noise safety, fire hazards, and geologic hazards as the Proposed Action. Because Alternative 1 would not develop within the central desert wash, the potential for accidental spills to enter surface or groundwater would be slightly reduced. However, with the implementation of APMs and mitigation proposed under the Proposed Action, the use of hazardous materials and potential spill response is not expected to adversely impact the central desert wash. With the implementation of APMs and proposed mitigation under Alternative 1 identical to that of the Proposed Action, Alternative 1 has similar or identical potential to result in public health and safety impacts compared to the Proposed Action.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would be constructed within the same project boundary as the Proposed Action but would eliminate the desert dry wash woodland with a 200 foot buffer and areas within the Mojave fringe-toed lizard suitable habitat from areas where the Project could be developed. With these areas removed from the site, Alternative 2 is estimated to include a 200 MW project (due to the smaller project site available). Because the overall size of the Project would be reduced, the potential for public health and safety impacts under Alternative 2 would be reduced compared to the Proposed Action.

The reduced project scale would incrementally reduce the amount and duration of hazardous material use during both construction and operation. It would also reduce the amount of solid waste generated and potential for fire hazards during construction and operation. The reduction in project footprint would reduce the potential for encountering site-specific geologic hazards and encountering UXOs. Potential impacts related to aviation noise safety and transmission line safety and nuisance would be similar to that under the Proposed Action. With the implementation of APMs and mitigation proposed under Alternative 2, effects would be substantially similar in nature but reduced in extent to those of the Proposed Action.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. Defining the type of project that may be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development

likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.11.3 Cumulative Effects

Geographic Scope

The geographic scope for the analysis of cumulative impacts associated with public health and safety is the area within approximately 3 miles of the project site. This geographic scope is appropriate because it accounts for the amount of hazardous materials that would be utilized for the construction of the Proposed Action, other on-site hazards such as the likelihood of discovering contaminated soil within or near the project footprint, and the likely maximum distance of contaminate transport.

Current and reasonably foreseeable projects identified within the geographic extent include the Desert Southwest Transmission Line, DC 50 Solar, SunPower Project, and Devers-Palo Verde 1 and 2 Transmission Lines. Many of these projects and planning actions have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so. Even if environmental review has not been completed for the projects, their effects were considered in the cumulative impacts analyses in this EIS/EIR, as appropriate.

Cumulative Impact Analysis

The past, present, and reasonably foreseeable development projects contribute or would contribute to the cumulative conditions for public health and safety hazards within the cumulative analysis study area. The current and reasonably foreseeable renewable energy and transmission projects identified above could result in accidental releases of hazardous materials or mobilization of contaminated soil during construction and would affect fire hazards and other site-specific hazards within the cumulative analysis study area in a manner similar to the Proposed Action. The Devers-Palo Verde 1 and 2 transmission lines are existing projects so would have minimal effects to public health and safety beyond standard operation and maintenance.

Construction of the new transmission line and solar projects would involve the use of heavy machinery and construction vehicles that could leak hazardous materials including gasoline and diesel fuel, engine oil, coolant, lubricants, and grease. Construction and operation would also involve the storage or use of hazardous materials, which could result in localized soil or groundwater contamination if spilled and could also result in worker exposure and soil contamination. Because of the small amount of hazardous materials that would be stored and utilized for the foreseeable projects and the low intensity and frequency of maintenance activities, any potential operational hazards and hazardous materials impacts would be very minor. These potential adverse effects would combine with the hazards and hazardous materials adverse effects from the Proposed Action to result in a cumulative adverse effect. However, it should be noted that no residents live within the geographic extent of cumulative public health and safety impacts and the risk of contamination is low.

Other potential public health and safety impacts including fire hazards, UXOs, transmission line safety and nuisance, aviation noise safety, and geologic hazards would be site-specific impacts for

the Proposed Action and each of the past, present, and reasonably foreseeable development projects listed above for the cumulative analysis study area. The implementation of mitigation described in Section 4.11 would reduce these potential impacts of the Proposed Action. Furthermore, it should be noted that no residents live within the proposed project site or the area of geographic extent for cumulative public health and safety impacts. Therefore, while each past, present, and reasonably foreseeable development projects have the potential for these public health and safety impacts, they would be site specific and mitigated at a site/project level.

4.11.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are three APMs relevant to public health and safety (Section 2.2.7, Chapter 2). Table 4.11-2 explains how these measures reduce project effects, and how they relate to mitigation measures recommended below.

Table 4.11-2. Applicant Proposed Measures for Public Health and Safety

APM #	Text	Explanation
APM-29	In addition to the applicable required governmental safeguards, implement up-to-date standard industry construction practices to prevent toxic substances from leaching into the soil.	Augmented by Mitigation Measures HAZ-2 (Hazardous Materials Management Plans) and WASTE-3 (Soil Inspection), APM-29 further reduces project impacts to public health and safety from toxic substances spills.
APM-30	Prepare an emergency response plan, approved by the BLM contaminant remediation specialist, that ensures rapid response in the event of spills of toxic substances over soils.	Augmented by Mitigation Measures HAZ-2 (Hazardous Materials Management Plans) and WASTE-3 (Soil Inspection), APM-30 further reduces project impacts to public health and safety from toxic substances spills.
APM-43	Implement the following standard practice for fire prevention/protection: ▪ Implement site-specific fire prevention/protection actions particular to the construction and operation of the Project that include procedures for reducing fires while minimizing the necessary amount of vegetation clearing, fuel modification, and other construction-related activities. At a minimum these actions will include designating site fire coordinators, providing adequate fire suppression equipment (including in vehicles), and establishing emergency response information relevant to the construction site.	Augmented by Mitigation Measure WORKER SAFETY-7: (Fire Protection/Response Infrastructure), APM-43 further reduces project impacts to public health and safety from fires.

This analysis has considered mitigation measures proposed within the 2011 Plan Amendment/ Final Environmental Impact Statement (PA/FEIS) for the Palen Solar Power Project (PSPP) and the 2010 Revised Staff Assessment (RSA). In addition, this section also draws, where applicable, from mitigation measures proposed within the 2013 Draft Supplemental Environmental Impact Statement (SEIS) for the Palen Solar Electric Generating System (PSEGS) and from the PSEGS 2013 Final Staff Assessment (FSA) and 2014 Revised Presiding Member's Proposed Decision.

All previously proposed mitigation measures were reviewed with the following considerations:

- The change in technology of the Proposed Action to solar PV technology.
- That no persons or structures are located or proposed near the transmission line route of the Project.
- If laws and practices already require mitigation items be followed.

Based on this review, the following mitigation measures have been eliminated because they are not necessary to reduce or avoid adverse public health and safety effects of the Proposed Action:

- CIVIL-1: Submittals to the CBO. This mitigation measure is eliminated because it requires submittal of plans already required under Mitigation Measure WR-1 (Drainage Erosion and Sedimentation Control Plan).
- CIVIL-2: Unforeseen adverse soil or geologic conditions. This measure is eliminated because it was not required for any specific effect. As standard operating procedures, the Applicant or their contractor would half construction if the soils engineering identifies unforeseen adverse soil or geologic conditions as such instances could result in project failure.
- CIVIL-3: Inspections and Discrepancy Reports. This measure is eliminated because the Project would be required to follow existing regulations regarding all inspections.
- CIVIL-4: Final Grading Plan Approval. This mitigation measure is eliminated because it requires submittal of plans already required under Mitigation Measure WR-1 (Drainage Erosion and Sedimentation Control Plan).
- HAZ-4: Installation of Isolation Valves for Heat Transfer Fluid. This mitigation measure is eliminated because the Proposed Action would not include the use of heat transfer fluid.
- HAZ-5: Construction Site Security Plan. This mitigation measure is eliminated because the Project Description already notes the need for a site security, which would be maintained as required by the Engineering, Procurement, and Construction (EPC) contractor or a suitable subcontractor to maintain public safety and the security of the facilities.
- HAZ-6: Operation Security Plan. This mitigation measure is eliminated because the Project Description already notes the need for a site security, which would be maintained as required by the O&M contractor or a suitable subcontractor to maintain public safety and the security of the facilities.
- PUBLIC HEALTH-1: Cooling Water Management Plan. This mitigation measure is eliminated because the Proposed Action would not include the use of cooling water.
- SOIL&WATER-18: Groundwater Quality Monitoring and Reporting Plan. This measure has been revised in Section 4.19 (Water Resources) and is required for that section.
- WASTE-5: Hazardous Waste Generator Identification. This measure is eliminated because it is required by existing regulations
- WASTE-6: Notification of Waste-Management Violation. This measure is eliminated because it is unlikely that any waste management-related enforcement action would occur given the amount of waste likely to be generated.
- WASTE-8: Heat Transfer Fluid Spills and Releases. This mitigation measure is eliminated because the Proposed Action would not include the use of heat transfer fluid.

- WASTE-10: Appropriate Landfill Use. This measure was eliminated because there are sufficient landfills in proximity to the Proposed Action and each would determine whether they could accommodate project waste and how much. A measure if not needed to reduce the effect.
- STRUC-1: Structure Approval. This measure requires design review and approval which is generally performed by the Applicant to ensure project feasibility.
- TLSN-1: EMF Reduction Guidelines. This measure is eliminated because it is required by existing regulations
- TLSN-2: Measurements of Electric and Magnetic Fields. This measure is eliminated because it is required by existing regulations
- TLSN-3: Transmission Line Distance from Combustible Material. This measure is eliminated because it is required by existing regulations
- TLSN-4: Grounding Permanent Metallic Objects. This measure requires the Applicant to follow industry standards to ensure permanent metallic objects are grounded. The Applicant will need to work with the existing private and public right-of-way holders, including Southern California Edison, to design and construct the gen-tie line so would need to comply with the industry standards requested by SCE to interconnect with the existing substation.
- TRANS-1: Regulation Compliance. This measure is eliminated because it is required by existing regulations
- TRANS-2: Transport of Hazardous Materials. This measure is eliminated because it is required by existing regulations
- WORKER SAFETY-1: Project Construction Safety and Health Program. This measure is eliminated because it is required by existing safety regulations. As part of the Plan of Development, the Applicant is required to prepare a Fire Plan for review and approval by BLM and Riverside County.
- WORKER SAFETY-2: Project Operations and Maintenance Safety and Health Program. This measure is eliminated because it is required by existing safety regulations.
- WORKER SAFETY-4: Safety Monitor. This measure has been eliminated because the Chief Building Official is an Energy Commission designation and would not exist under the BLM and Riverside County. The BLM and Riverside County would negotiate any fees for reviewing reports or for a Safety Monitor based on their standard operating procedures.
- WORKER SAFETY-5: Automatic External Defibrillator (AED). This measure is eliminated because the Project would comply with standard OSHA and CAL-OSHA regulations that are the most up to date requirements for worker safety.
- WORKER SAFETY-6: Emergency Access Point. This measure is eliminated after discussions between EDF and Riverside County Fire Department due to the proximity between the Project maintenance building and the paved Corn Springs exit ramp.
- WORKER SAFETY-8: Water Spray System. This mitigation measure is eliminated because the Proposed Action would not include the use of an LPG storage tank.

- WORKER SAFETY-9: Enhanced Dust Control Plan. This measure is eliminated because the Project would comply with standard OSHA and CAL-OSHA regulations that are the most up to date requirements for worker safety.

Based on the revised analysis provided in this section, the following previously proposed mitigation measures are recommended to reduce potential public health and safety impacts of the Proposed Action. A new mitigation measure (HAZ-4) has been incorporated to reduce the effects of the use of herbicides.

GEO-1 **Soils Engineering Report.** The Soils Engineering Report required by Section 1802A of the 2007 CBC shall specifically include laboratory test data, associated geotechnical engineering analyses, and a thorough discussion of potential hydrocompaction or dynamic compaction; the presence of expansive clay soils; and the presence of corrosive soils. The report shall also include recommendations for ground improvement and/or foundation systems necessary to mitigate these potential geologic hazards, if present.

HAZ-1 **Hazardous Material Requirements.** The project owner shall provide the BLM with a list of the hazardous materials they are planning on using prior to the start of construction and will not use any hazardous material not listed unless approved in advance by the BLM AO. Use of Approved Hazardous Materials places a limitation on the use and storage of hazardous materials and their strength and volume.

HAZ-2 **Hazardous Materials Management Plan (HMBP).** The project owner shall concurrently provide a Hazardous Materials Business Plan (HMBP), a Spill Prevention, Control, and Countermeasure Plan (SPCC), and a Process Safety Management Plan (PSMP) to the BLM AO and the Riverside County Environmental Health Department for review. After receiving comments from the RCEHD and the BLM, the project owner shall reflect all recommendations in the final documents. Copies of the final HMBP, SPCC Plan, and PSMP will be provided to the RCEHD and BLM for approval.

HAZ-3 **Safety Management Plan.** The project owner shall develop and implement a Safety Management Plan for the delivery and handling of liquid and gaseous hazardous materials. The plan shall include procedures, protective equipment requirements, training and a checklist. It shall also include a section describing all measures to be implemented to prevent mixing of incompatible hazardous materials. This plan shall be applicable during construction, commissioning, and operation of the power plant.

HAZ-4 **Use Licensed Herbicide Applicator**. During the construction and operational phases of the project, the contractor or personnel applying herbicides shall have all the appropriate State and local herbicide applicator licenses and comply with all State and local regulations regarding herbicide use, including the BLM's 2007 Vegetation Treatments Using Herbicide Programmatic Final Environmental Impact Statement. Herbicides shall be mixed and applied in conformance with the product manufacturer's directions. The herbicide applicator shall be equipped with splash protection clothing and gear, chemical resistant gloves, chemical spill/splash wash

supplies, and material safety data sheets (MSDSs) for all hazardous materials to be used. To minimize harm to wildlife, vegetation, and water-bodies, herbicides shall not be applied directly to wildlife, products identified as non-toxic to birds and small mammals shall be used if nests or dens are observed, and herbicides shall not be applied within 50 feet of any surface waterbody when water is present. Herbicides shall not be applied if it is raining at the site, rain is imminent, or the target area has puddles or standing water. Herbicides shall not be applied when wind velocity exceeds 10 miles per hour. If spray is observed to be drifting to a non-target location, spraying shall be discontinued until conditions causing the drift have abated.

Prior to any herbicide application, the herbicide applicator shall contact the Environmental Monitor to show where work will be done and to receive information/ training about potentially sensitive biological resources that may be within the area to be sprayed and methods to apply to minimize those impacts. A Worker's Training Manual shall be prepared and include a provision on herbicide application. Once facility operation commences, this Manual shall be given to any herbicide applicator to be reviewed prior to spraying.

WASTE-1 **Training and Reporting Plan.** The project owner shall prepare a UXO Identification, Training and Reporting Plan to properly train all site workers in the recognition, avoidance and reporting of military waste debris and ordnance. The project owner shall submit the plan to the BLM AO for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following:

1. A description of the training program outline and materials, and the qualifications of the trainers; and
2. Identification of available trained experts that will respond to notification of discovery of any ordnance (unexploded or not); and
3. Work plan to recover and remove discovered ordnance, and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near surface or buried ordnance in all proposed land disturbance areas.

WASTE-2 **Resume of Professional Engineer or Geologist.** Professional Engineer or Professional Geologist to the BLM AO for review and approval. The résumé shall show experience in remedial investigation and feasibility studies. This Professional Engineer or Professional Geologist shall be available during site characterization (if needed), excavation, grading, and demolition activities. The Professional Engineer or Professional Geologist shall be given authority by the project owner to oversee any earth-moving activities that have the potential to disturb contaminated soil and impact public health, safety, and the environment.

WASTE-3 **Inspection and Reporting of Potentially Contaminated Soil.** If potentially contaminated soil is identified during site characterization, excavation, grading, or demolition at either the proposed site or linear facilities — as evidenced by discoloration, odor, detection by handheld instruments, or other signs — the Professional

Engineer or Professional Geologist shall inspect the site; determine the need for sampling to confirm the nature and extent of contamination; and provide a written report to the project owner, representatives of Department of Toxic Substances Control (DTSC) or Regional Water Quality Control Board (RWQCB), and the BLM AO stating the recommended course of action.

Depending on the nature and extent of contamination, the Professional Engineer or Professional Geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If in the opinion of the Professional Engineer or Professional Geologist significant remediation may be required, the project owner shall contact the CPM, AO and representatives of the DTSC or RWQCB for guidance and possible oversight.

WASTE-4 **Construction Waste Management Plan.** The project owner shall submit a Construction Waste Management Plan to the BLM AO and Riverside County for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following:

1. a description of all construction waste streams, including projections of frequency, amounts generated and hazard classifications;
2. a survey of structures to be demolished that identifies the types of waste to be managed;
3. a reuse/recycling plan for construction and demolition materials that meets or exceeds the 50 percent waste diversion goal established by the Integrated Waste Management Compliance Act; and,
4. management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods, and companies providing treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

WASTE-7 **Operation Waste Management Plan.** The project owner shall submit the Operation Waste Management Plan to the BLM AO for review and approval. The plan shall contain, at a minimum, the following:

1. a detailed description of all operation and maintenance waste streams, including projections of amounts to be generated, frequency of generation, and waste hazard classifications;
2. management methods to be used for each waste stream, including temporary on-site storage, housekeeping and best management practices to be employed, treatment methods and companies providing treatment services, waste testing methods to ensure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/source reduction plans;
3. information and summary records of contacts with the local Certified Unified Program Agency and the Department of Toxic Substances Control regarding

any waste management requirements necessary for project activities. Copies of all required waste management permits, notices, and/or authorizations shall be included in the plan and updated as necessary;

4. a detailed description of how facility wastes will be managed and any contingency plans to be employed, in the event of an unplanned closure or planned temporary facility closure; and

5. a detailed description of how facility wastes will be managed and disposed upon closure of the facility.

WASTE-9 **Accidental Spill Remediation.** The project owner shall ensure that all accidental spills or unauthorized releases of hazardous substances, hazardous materials, and hazardous waste are document and remediated, and that wastes generated from accidental spills and unauthorized releases are properly managed and disposed of in accordance with applicable federal, state, and local laws, ordinances, and regulations and requirements. For the purpose of this measure, "release" shall have the definition in Title 40 of the Code of Federal Regulations, Part 302.3.

WORKER SAFETY-3 **Construction Safety Supervisor.** The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of power plant construction activities and relevant laws, ordinances, regulations, and standards; is capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to assure compliance and mitigate hazards. The CSS shall:

1. have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;

2. assure that the safety program for the project complies with Cal/OSHA and federal regulations related to power plant projects;

3. assure that all construction and commissioning workers and supervisors receive adequate safety training;

4. complete accident and safety-related incident investigations and emergency response reports for injuries and inform the BLM safety-related incidents; and

5. assure that all the safety plans identified in are implemented.

WORKER SAFETY-7 **Fire Protection/Response Infrastructure.** The project owner shall reach an agreement with the Riverside County Fire Department and BLM regarding funding of its project related share of capital costs to build fire protection/response infrastructure and services. To address project impacts, the agreement between the project owner and the County shall address the following:

A. Project related share of capital and operating costs to improve fire protection/ emergency response infrastructure and provide appropriate equipment and training as mitigation of Project-related impacts on fire protection/emergency response services within the jurisdiction in an amount to be negotiated between the parties;

B. At least 90 days prior to the start of construction, the project owner shall submit for review a copy of the Project Construction Safety Plan, Fire Protection Plan, Transportation Plan and a Hazardous Materials Business/Emergency Plan.

C. Future construction and expansion of the Project will be subject to review by the fire department. Secondary emergency vehicle access will be addressed and required.

D. Given the distance setbacks to the proposed buildings on the project site as currently designed and in lieu of providing secondary access to the project, the Applicant shall provide a FAA approved helipad onsite or adjacent to the proposed development. The helipad will allow for emergency evacuation of injured SPP occupants and firefighters in the event the primary access point to the Project is compromised.

4.11.5 Residual Effects after Implementation of Mitigation Measures

Although unlikely, it is possible that even after the implementation of the mitigation measures identified above, an accidental hazardous material release could occur.

4.11.6 Unavoidable Adverse Impacts

Although unlikely, it is possible that even after the implementation of the mitigation measures identified above, an accidental hazardous material release could occur.

4.11.7 CEQA Significance Thresholds and Determinations

In accordance with Appendix G to the State CEQA Guidelines, public health and safety impacts (hazards and hazardous materials under Appendix G) would be considered significant if the Proposed Action would:

Hazards and Hazardous Materials Under Appendix G:

HAZ-1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;

HAZ-2 Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;

HAZ-3 Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school;

HAZ-4 Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment;

HAZ-5 For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the project area;

HAZ-6 For a project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the project area;

HAZ-7 Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or

HAZ-8 Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

Geology Under Appendix G:

GS-1 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving rupture of a known earthquake fault;

GS-2 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving strong seismic shaking;

GS-3 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving seismic-related ground failure, including liquefaction;

GS-4 Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving landslides; or

GS-5 Be located on a geologic unit or soil that is unstable, or would become unstable as a result of the project and potentially result in on-site or off-site landside, lateral spreading, subsidence, liquefaction or collapse.

HAZ-1 Routine Transport, Use, or Disposal of Hazardous Materials

Hazardous or flammable materials used during construction of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative would consist primarily of small volumes of petroleum hydrocarbons and their derivatives (e.g., fuels, oils, lubricants, and solvents) required for the operation of construction equipment. These materials would be those routinely associated with the operation and maintenance of heavy construction equipment or other support vehicles, such as gasoline, diesel fuels, and hydraulic fluids. In addition to these hazardous materials, it is anticipated that small quantities of additional common hazardous materials would be used on-site during construction, including antifreeze and used coolant, latex and oil-based paint, paint thinners and other solvents, cleaning products, and possibly herbicides. Due to the smaller configuration of the Avoidance Alternative (200 MW project), construction duration would likely be shorter; therefore, the impacts of this alternative would be less than that of the Proposed Action or Reduced Footprint Alternative.

Mitigation Measures HAZ-1 through HAZ-3 (Hazardous Material Requirements, Hazardous Material Management Plan (HMBP), and Safety Management Plan, respectively), WASTE-2 (Resume of Professional Engineer or Geologist), WASTE-3 (Inspection and Reporting of Potentially Contaminated Soil), and WASTE-7 (Operation Waste Management Plan) would ensure the proper storage, transport, and disposal of hazardous wastes utilized onsite, as well as develop spill prevention and clean up protocols. Overall, the usage, transport, and disposal of

hazardous or flammable materials during construction would result in a less than significant impact with the implementation of these mitigation measures.

The No Action Alternative would not have any impacts related to Impact HAZ-1 since under this alternative, the Proposed Action would not be constructed.

HAZ-2 Upset and Accident Conditions Involving the Hazardous Materials

As described above in Impact HAZ-1, construction and operation of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative would require the limited use of hazardous materials that could result in potential adverse health and environmental impacts if these materials were used, stored, or disposed of improperly, causing accidents, spills, or leaks. Due to the smaller configuration of the Avoidance Alternative (200 MW project), it is possible that fewer hazardous materials will be utilized for its construction; therefore, the impacts of this alternative may be less than that of the Proposed Action or Reduced Footprint Alternative.

Mitigation Measures HAZ-1 through HAZ-3 (Hazardous Material Requirements, Hazardous Material Management Plan (HMBP), and Safety Management Plan, respectively), WASTE-2 (Resume of Professional Engineer or Geologist), WASTE-3 (Inspection and Reporting of Potentially Contaminated Soil), and WASTE-7 (Operation Waste Management Plan) would ensure the proper storage, transport, and disposal of hazardous wastes utilized onsite, as well as develop spill prevention and clean up protocols. Reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment during construction of the Project or action alternatives would result in a less than significant impact with implementation of these mitigation measures.

The No Action Alternative would not have any impacts related to Impact HAZ-2 since under this alternative, the Proposed Action would not be constructed.

HAZ-3 Emit Hazardous Emissions Within One-Quarter Mile of an Existing or Proposed School

The project site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative is not located within one-quarter mile of an existing or proposed school. Therefore, no impacts would occur. Similarly, no impact would result from the No Action Alternative since construction of the Proposed Action would not occur.

Since no impacts have been defined for Impact HAZ-3, no mitigation measures are required.

HAZ-4 Hazardous Materials Sites Compiled Pursuant to Government Code Section 65962.5

The project site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative is not located on an identified hazardous materials site pursuant to Government Code Section 65962.5. However, as discussed earlier, the Project could pose hazards from disturbing naturally contaminated soils and UXOs.

Mitigation Measures GEO-1 (Soils Engineering Report), WASTE-2 (Resume of Professional Engineer or Geologist), WASTE-3 (Inspection and Reporting of Potentially Contaminated Soil),

and WASTE-7 (Operation Waste Management Plan) would ensure ground disturbance does not create a significant hazard to the public or the environment. Implementation of these proposed mitigation measures would reduce impacts to a less than significant level.

The No Action Alternative would not have any impacts related to Impact HAZ-4 since under this alternative, the Proposed Action would not be constructed.

HAZ-5 Be Within 2 Miles of A Public Airport or Public Use Airport and Result in a Safety Hazard for People Residing or Working in the Project Area

The Desert Center Airport is located approximately 5 miles northwest of the main project site; it is used an average of approximately 12 times a month. The Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative does not include the construction of any housing or habitable structures. During the construction and operational phase, personnel would be on-site during the majority of the hours of operation. However, due to the limited use of the Desert Center Airport and the distance from the project site, the Project and action alternatives would not result in a safety hazard for people working in the project area. No impacts from the Proposed Action or action alternatives would occur with respect to Impact HAZ-5. Similarly, no impact would occur as a result of the No Action Alternative since under this alternative, the Proposed Action would not be constructed.

Since no impacts have been defined for Impact HAZ-5, no mitigation measures are required.

HAZ-6 Be within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area.

No private airstrips are known to be located within the vicinity of the project site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative. No impacts would occur with respect to Impact HAZ-6. Similarly, no impact would occur as a result of the No Action Alternative since under this alternative, the Proposed Action would not be constructed.

Since no impacts have been defined for Impact HAZ-6, no mitigation measures are required.

HAZ-7 Adopted Emergency Response Plan or Emergency Evacuation Plan

The Project, Reduced Footprint Alternative, and Avoidance Alternative may require temporary lane closures/disruptions during wire stringing of the transmission line. However, any disruptions would be on local rural roadways not knows to be part of any designated emergency evaluation routes. Furthermore, any disruptions would be for very brief periods and would not interfere with the road surface, merely coning off travel lane while overhead transmission line work occurred. In the event of an emergency, the travel lane could be immediately reopened. The Proposed Action and action alternatives would therefore result in a less-than-significant impact on the implementation of an adopted emergency response plan or emergency evacuation plan.

No impact would occur as a result of the No Action Alternative since under this alternative, the Proposed Action would not be constructed.

Since no significant impacts have been defined for Impact HAZ-7, no mitigation measures are required.

HAZ-8 Wildland fires

Wildland fires are not expected due to minimal vegetation in the project site and surrounding area (desert landscape). The project site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative is not located on forest or wilderness land, and the Proposed Action and action alternatives would not involve the construction or operation of habitable structures in wildland areas or promote development in wildland areas. Therefore, the Proposed Action and action alternatives would not introduce any fire hazards within wildlands adjacent to urbanized areas or where residences are intermixed with wildlands. No impact would occur to people or structures as a result of an increased risk due to wildland fires. Similarly, no impact would occur as a result of the No Action Alternative since under this alternative, the Proposed Action would not be constructed.

Since no impacts have been defined for Impact HAZ-8, no mitigation measures are required.

GS-1 Known Earthquake Fault

Although there are a number of faults within 63 miles (100 kilometers) of the project site, none are within 35 miles (CEC, 2010). While the site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative could be subject to moderate levels of earthquake related ground shakings, there will be no habitable structures onsite once construction is completed; therefore, geological risks are minimal.

The effects of groundshaking, which could include aesthetic damage and slight damage to structural connections, would be mitigated through structural designs required by the California Building Code. Along with Mitigation Measure GEO-1 (Soils Engineering Report), these measures will ensure that people or structures are not exposed to potential substantial adverse effects. The impact of Impact GS-1 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact GS-1 since under this alternative, the Proposed Action would not be constructed.

GS-2 Seismic Shaking

As described above in Impact GS-1, there are a number of faults within 63 miles (100 kilometers) of the project site; although, none are within 35 miles (CEC, 2010). While the site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative could be subject to moderate levels of earthquake related ground shakings, there will be no habitable structures onsite once construction is completed; therefore, geological risks are minimal.

The effects of groundshaking which could include aesthetic damage and slight damage to structural connections would be mitigated through structural designs required by the California Building Code. Along with Mitigation Measure GEO-1 (Soils Engineering Report), these measures will ensure that people or structures are not exposed to potential substantial adverse effects. The impact of Impact GS-1 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact GS-2 since under this alternative, the Proposed Action would not be constructed.

GS-3 Liquefaction

Liquefaction is a condition in which a saturated cohesionless soil may lose shear strength because of sudden increase in pore water pressure caused by an earthquake. However, the potential for liquefaction of strata deeper than approximately 40 feet below surface is considered negligible due to the increased confining pressure and because geologic strata at this depth are generally too compact to liquefy.

The project site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative is in an area with a low to moderate level of liquefaction potential (CEC, 2010). Geological risks are minimal since there will be no habitable structures onsite once construction is completed. Additionally, the estimated depth to groundwater is greater than 60 feet below existing grade which coupled with the medium dense to very dense nature of the coarse grain soils encountered during the PSPP borings indicate no liquefaction potential. Therefore, there would be no impact to people or structures. Similarly, no impact would occur as a result of the No Action Alternative since under this alternative, the Proposed Action would not be constructed.

Since no impacts have been defined for Impact GS-3, no mitigation measures are required.

GS-4 Landslides

Due to the low site gradient and the absence of topographically high ground in the immediate site vicinity of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative, the potential for landslide impacts to the site is considered to be negligible. Moreover, there will be no habitable structures onsite after completion of construction. There would therefore be no impact to people or structures due to landslides. Similarly, no impact would occur as a result of the No Action Alternative since under this alternative, the Proposed Action would not be constructed.

Since no impacts have been defined for Impact GS-4, no mitigation measures are required.

GS-5 Landslides, Lateral Spreading, Subsidence, Liquefaction or Collapse

The proposed site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative is not located on a geologic unit or soil that could result in liquefaction or landslides, as discussed above in Impact GS-4. Moreover, geological risks are minimal since there will be no habitable structures onsite once construction is completed.

Lateral spreading of the ground surface can occur within liquefiable beds during seismic events. Lateral spreading generally requires an abrupt change in slope such as a nearby steep hillside or deeply eroded stream bank. Other factors such as distance from the epicenter, magnitude of the seismic event, and thickness and depth of liquefiable layers also affect the amount of lateral spreading. Because the proposed site is not subject to catastrophic liquefaction-induced settlement, the potential for lateral spreading during seismic events would be less than significant due to the low relief and very shallow slopes at the proposed site surface.

The Riverside County General Plan indicates the basin fill sediments in Chuckwalla Valley are susceptible to subsidence (RCLIA, 2008). Regional ground subsidence is typically caused by petroleum or groundwater withdrawal. However, even during the 1980s and 1990s when regional

groundwater extraction was at its historic maximum of approximately 48,000 acre-feet per year (ac-ft/yr) no localized or regional subsidence was recorded. No petroleum or natural gas withdrawals are taking place in the proposed site vicinity. Therefore, the potential for local or regional ground subsidence resulting from petroleum, natural gas, or groundwater extraction is considered to be very low and less than significant.

Given the geologic setting of the region, the project site is unlikely to become unstable as a result of the Project or action alternatives and result in collapse. The impact would be less than significant.

The No Action Alternative would result in as a result of on-site or off-site landside, lateral spreading, subsidence, liquefaction, or collapse since under this alternative, the Proposed Action would not be constructed.

Since no significant impacts have been defined for Impact GS-5, no mitigation measures are required.

Cumulative Impacts

Construction and operation of the Proposed Action or alternatives would combine with the impacts from the construction and operation of other projects in the cumulative analysis study area to result in a significant cumulative impact with respect to hazards and hazardous materials. Without the implementation of mitigation described in Section 4.11.4, the incremental contribution of the Proposed Action to the significant cumulative impact would be cumulatively considerable. However, with implementation of the mitigation measures=, the contribution of the Proposed Action or alternatives to significant public health and safety cumulative impacts would be less than significant.

4.12 Recreation

This section describes and evaluates the effects related to recreation resources of the Palen Solar Project (Proposed Action), two alternatives, and the No Action Alternative.

This analysis incorporates the recreation analysis from BLM's 2011 Plan Amendment/Final EIS (PA/FEIS) and the CEC's 2010 Revised Staff Assessment (RSA). However, the analysis is modified here to account for the updated environmental baseline and the PV technology.

4.12.1 Impact Assessment Methodology

The effects of the Project on recreation were assessed based on the following considerations: whether project construction, operation or decommissioning would directly or indirectly impact recreational opportunities, including hiking, backpacking and long-term camping in established Federal, State, or local recreation areas and/or wilderness areas. Impacts to OHV users are discussed in Section 4.16 of this Supplemental EIS/EIR, Impacts on Transportation and Public Access – Off-Highway Vehicle Resources.

Mitigation Measures and Applicant Proposed Measures

This analysis considers the mitigation measures presented in the PSPP analysis in the BLM PSPP PA/FEIS (BLM, 2011) and CEC RSA (CEC, 2010). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.12.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.12.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. APM-44, APM-45, and APM-48 are relevant to public access. The text of these APMs is also presented in Section 4.16.4.

4.12.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The proposed 500 MW solar PV project would result in direct and indirect effects to recreation.

Proposed Action: Direct Effects

The Proposed Action would convert approximately 4,200 acres of land that is currently available for recreational use to a solar PV project within a fenced site of approximately 3,881 acres that would be unavailable to the public. This would be similar to the effects of the PSPP and PSEGS projects, which would have also converted this site to a solar project. During construction and operation, the site would not be available for recreational use.

OHV Access Limitations and Closure of Open Routes. The closure of the Palen site to recreational and OHV use could lead to higher user levels on adjacent public lands that remain open for

recreation use. This more concentrated use of those areas could lead to loss of some native vegetation, wildlife habitat fragmentation or loss, elevated soil loss, increases in noise, and possible temporary declines in air quality from more concentrated vehicle use in a smaller available area. The recreational use of the site is generally low recreation, but the required closure of several open routes would constrain this use.

As also described in Section 4.16 (Transportation, Public Access, and OHV),In addition, the closure of several open routes would restrict OHV and other recreational access to public lands beyond the project site, if no other routes are defined or developed. Figure 3.16-1 (Off-Highway Vehicle Routes in the Project Vicinity, Appendix A) shows several routes that now pass through the project area. As described in Section 4.16, the closure of these routes could preclude access to areas north and east of the Project. Project construction and its long-term presence would affect the following routes:

- **Routes DC949, DC948, and DC952** run from the northwest to southeast through the Project. There are no existing alternate routes available and closure of these routes would affect motorized recreation touring between Desert Center and Blythe. Because Route DC952 is located just within the project fenceline so it would be closed to the public due to obstruction by Project fences. While APMs 44, 45, and 48 would reduce some impacts, Mitigation Measure RC-1 (Prevent Blockage of Open Route DC952; see Section 4.12.4) recommends a specific solution, the relocation of the project fenceline to avoid blockage of this route. The revised fenceline is illustrated in Figure 4.16-1 (Appendix A), showing that the revision would result in a change to the project footprint of less than 30 acres.
- **Route DC511** is the access road for SCE's existing 115 kV transmission line; it would be avoided by the Project and would remain open and unfenced.
- **Route DC950** runs from the I-10 Corn Springs Road exit, northeast, diagonally across the Project. After the first one-half mile, this route would be blocked by the Project, and alternative routes would be difficult to develop, because, as shown on Figure 3.16-1, there are private lands adjacent to the Project on the northwest, northeast, and southeast corners. However, similar access to the dunes is provided by DC951 to DC502. While APM-48 provides for installation of interpretive signs at strategic locations, Mitigation Measure RC-2 (see Section 4.12.4) is recommended to provide more specific direction on these compensatory actions. This measure would compensate for loss of DC950 by providing recreational signage along the remaining open routes.

Special Recreation Permit. Some construction workers may reside temporarily in recreational vehicles or they may camp at the Mule Mountains and Midland Long-term Visitor Areas (LTVAs), or possibly camp on public lands in the vicinity of the Project. Although the BLM offers developed campgrounds within commuting distance of the Project, only LTVAs allow long-term camping. The Midland and Mule Mountains LTVAs (located 45 and 30 miles from the Palen site, respectively), allow camping for up to seven months (September 14 to April 16) with a special use permit. Outside of these dates, the camping limit is 14 days.

Depending on the number of workers using an LTVA, use could impact the social setting because the LTVA would be used as semi-permanent housing rather than for recreational purposes. The LTVAs are designed with minimal facilities given that campers must use self-contained RVs, and

there are no assigned or designated sites, except for the Wiley's Well and Coon Hollow Campgrounds within the Mule Mountains LTVA. Midland LTVA is 135 acres and averages 41 permits per year. Mule Mountains LTVA is 2,805 acres with an average of 135 permits per year. Except for the designated campsites at Wiley's Well and Coon Hollow, each LTVA can accommodate several hundred RV units with a minimum distance of 15 feet between units, so the effects of use by construction workers would be minimal.

Proposed Action: Indirect Effects

Indirect effects of the Proposed Action would be from noise, fugitive dust, and truck and other vehicle ingress and egress to the construction site. They would be similar to those described for the PSPP and PSEGS projects, but less severe due to the reduced visibility of the PV technology. For a discussion of potential impacts to OHV route access to wilderness areas, see Section 4.16, Transportation and Public Access – Off Highway Vehicle Resources. For a discussion of the potential impacts to visual quality from wilderness areas and ACECs, see Section 4.18, Visual Resources.

Indirect effects to recreational users of specially designated lands (including the Special Recreation Management Area, wilderness areas and Areas of Critical Environmental Concern [ACECs]) could occur due to the distant views of the construction work and dust. Table 3.13-1 (in Chapter 3.13) lists the special designations that could be used for recreation. These wilderness areas and ACEC's do not have maintained trails or trailheads, and have a low number of public visitors (BLM, 2011). Nonetheless, recreational users could be impacted by construction, operation and decommissioning activities of the Proposed Action such as construction noise, fugitive dust, vehicle movement, and other "non-natural" construction activities and by the visible PV structures. These impacts could affect users' perception of solitude, naturalness and unconfined recreation. Similar types of effects would occur at the Chuckwalla Special Recreation Management Area designated under the Desert Renewable Energy Conservation Plan (DRECP) Land Use Plan Amendment (LUPA), which amends the CDCA Plan. Because the construction time would be reduced compared with the solar trough and power tower technologies, this effect would be reduced compared with the previous technologies.

During operation, the visual change at the site could affect visitors seeking experiences in a natural setting (see Section 4.18, Impacts on Visual Resources). The visibility of the PV project would be reduced compared with the solar trough and solar power tower technologies because of the lower height of the PV solar panels; elimination of the power towers, turbine generators, and air cooled condensers; and because PV panels are less reflective than the mirrors used in the other technologies. However, any renewable energy facility at the Palen site would be visible from many nearby recreational areas that are destinations for solitary or backcountry recreation such as the Palen-McCoy Wilderness Area. Unlike the solar power tower technology, night lighting for the solar PV project is expected to be minimal, so little detrimental effect to night skies and star gazing would be anticipated.

Joshua Tree National Park is located approximately 7 miles from the project site. Due to the distance from the National Park, there would be no noise impacts to recreational users during construction, operation and decommissioning activities. Impacts from visible dust would be minimal. The Proposed Action would be visible to recreational users from the Joshua Tree

National Park resulting in a visual effect as discussed in Section 4.18, Visual Resources. Because the PV technology is less visible than the solar trough or solar power tower technology, this effect would be reduced compared with the previous technologies.

Corn Springs is the closest BLM campground to the project site, located about 7.5 miles southwest of the Project. The location of the fee campground within the Chuckwalla Mountains prevents the Project from creating air or noise impacts on the visitors to the campground. All other campgrounds are located more than 20 miles from the Project beyond the indirect effects of the Project.

The pattern of recreational camping in dispersed areas is unlikely to change. As stated in Section 3.13, Recreation, dispersed camping has not been noted in the immediate area, and the nature of those who participate in dispersed camping in the general vicinity is such that they would have nearly unlimited choices in site selection.

Decommissioning impacts on recreation would likely be similar to those that would occur during construction (noise, vehicle emissions).

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would have a reduced development footprint (3,100 acres) when compared with that of the Proposed Action (4,221 acres, or 3,881 acres within the fenceline). In this alternative, the solar fields would be configured to fit within two separate portions of the site, avoiding use of the central desert wash and retaining the vegetation in the wash.

Construction, operations and maintenance, and decommissioning activities would be the same as with the Proposed Action. While the alternative would have a reduced footprint compared with the Proposed Action, the direct and indirect effects would be substantially the same. The blockage of open routes would be the same as with the Proposed Action, with routes DC948, DC950, and DC952 blocked by the alternatives fenceline. As noted in Section 4.18, Visual Resources, the views of the alternative would be substantially similar to those of the Proposed Action.

The Reduced Footprint Alternative would still prohibit use of the two separate panel areas of the site for recreational purposes. However, the central wash that would be avoided in this alternative would not be fenced, so it would be available for passage by people and wildlife. There is currently no designated route that follows the wash. Mitigation Measures RC-1 (Prevent Blockage of Open Route DC952) and RC-2 (Provide Interpretive and Informational Signs) are recommended for the Reduced Footprint Alternative.

The CDFW has stated a concern that if the wash that crosses the site were left unfenced and undeveloped by solar facilities, it may be attractive to recreationists traveling through the region (CDFW, 2016). This could reduce the benefits of this alternative to wildlife species. The open wash between the two large fenced areas of panels would funnel deer and other wildlife into the wash, creating an opportunity for hunters and OHV riders to track the animals into the wash. However, BLM regulations restricted OHV travel to open designated routes of travel, so motorized use of this corridor would be illegal use. In accordance with Mitigation Measure RC-2 (Provide Interpretive and Informational Signs), the wash would be signed as a closed route, and open routes would be identified to mitigate the potential for illegal cross country motorized activity.

Additional OHV use in the wash would also damage vegetation and potentially result in increased wildlife collisions. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures in Section 4.17) would require installation of a non-barbed wire traditional four-wire ranch fence across the wash area if necessary to control recreational travel through the wash area post-construction. This would allow animals and people on foot to use the wash, but would eliminate motorized vehicle use. With installation of this fence, the alternative would have essentially the same effects on recreation as the Proposed Action.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would have a much smaller development footprint (1,620 acres) than that of the Proposed Action (4,200 acres). This would allow preservation of more than half of the habitat on the site that would otherwise be developed as part of the Proposed Action. The types of construction, operations and maintenance, and decommissioning activities would be the same as with the Proposed Action, but the extent of these activities would be substantially reduced, due to the smaller development footprint. The alternative would result in the loss of substantially fewer acres of land available for recreation.

Similar to the Reduced Acreage Alternative, there is currently no designated route that follows the large space between the two panel blocks. While the designated routes would be less affected by the Avoidance Alternative, the same routes would be blocked to some extent. As a result, Mitigation Measures RC-1 (Prevent Blockage of Open Route DC952) and RC-2 (Provide Interpretive and Informational Signs) are recommended for the Reduced Footprint Alternative.

Indirect effects would be similar to those listed for the Proposed Action but reduced in scale and duration. As noted in Section 4.18, Visual Resources, the views of the alternative would be similar to those of the Proposed Action but reduced from some key observation points, including ones used for recreational purposes.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. Defining the type of project that may be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.12.3 Cumulative Effects

Geographic Scope

The geographic extent for the consideration of cumulative effects to recreation is the local and regional recreational opportunities along the I-10 corridor/eastern Riverside County. Tables 4.1-1 and 4.1-2 (in Section 4.1) list existing and reasonably foreseeable projects in this area that would

impact the regional recreational opportunities. From that list, the existing and reasonably foreseeable projects that would impact the local recreational experience or opportunities are listed in below. These projects are located in the Interstate 10 corridor, and they are included because of their potential to affect recreation users or the character of recreational areas.

- Blythe PV Project
- McCoy Solar Project
- Genesis Solar Energy Project
- Blythe Solar Power Project
- Desert Sunlight Solar Project
- A: SCE Red Bluff Substation
- Devers–Palo Verde 1 Transmission Line
- Devers–Palo Verde 2 Transmission Line
- Blythe Energy Project Transmission Line
- SCE Colorado River Substation
- Desert Renewable Energy Conservation Plan
- Desert Southwest Transmission Line
- Sonoran Energy Project (licensed as Blythe Energy Project Phase II)
- Eagle Mountain Pumped Storage Project
- Rice Solar Energy Project
- Desert Quartzite Solar
- Crimson Solar
- Blythe Mesa Solar Project
- Desert Harvest Solar Farm
- DC 50 Solar Project
- SunEdison Jupiter Project (CACA 56477)
- First Solar Development, LLC (CACA 56782)
- SunPower Project
- Plot Plan No. 23577, Revised Permit No 2

Cumulative Impact Analysis

Palen Solar Project and Action Alternatives. The long list of past, present, and reasonably foreseeable projects presented above demonstrate that there are many large- and small-scale industrial, utility-related, and other developments in the region. These projects result in the direct preclusion of access to certain recreational lands that would be dedicated to the primary development uses.

Two cumulative projects, the DRECP itself and Plot Plan No. 23577 would benefit recreation. The DRECP has designated hundreds of thousands of acres of desert land for Special Recreation Management Areas (SRMA) and Extensive Recreation Management Areas (ERMA), and the Plot Plan would provide Recreational Vehicle facilities at the Chuckwalla Valley Raceway.

Direct cumulative effects would be those affecting the primary recreational activities on the project site (OHV touring and sightseeing, photography, rockhounding, hiking, and hunting). Indirect effects on recreational use of lands in the cumulative impacts area could result from the change in the overall character of undeveloped BLM-administered lands resulting from the development of the cumulative projects, as well as from changes to the visual landscape, impacts on vegetation, development of roads, and related effects on wildlife. While, most of the projects in the cumulative scenario are in areas with low recreation use or potential future opportunities, recreational uses do use the existing open route network to cross the region from west to east or east to west. The development of the renewable projects in this region would result in a cumulative effect to this travel.

The Project or alternatives would alter the existing character of the project study area and may affect surrounding recreational uses as a result of the industrial development in previous open spaces. The Project in combination with the foreseeable projects would also have a substantial adverse effect on the wilderness experience of dispersed and occasional visitors to the Joshua Tree, Chuckwalla Mountains, and Palen/McCoy Wilderness Areas. Within the I-10 corridor area used

in this analysis, existing or future foreseeable projects account for approximately 46,880 acres of development.

A few of the proposed energy projects listed above are as near or nearer to Wilderness Areas, as well as other designated conservation and recreation areas such as ACECs and the Chuckwalla SRMA (e.g., Desert Harvest Solar Farm, Crimson Solar, and the SunPower Project). These future projects would result in construction noise and visual impacts on the recreation areas that would be similar to or greater than those of the Proposed Action. While the construction and operation of these projects is not expected to reduce visitation to the recreation areas, it is expected to diminish the wilderness experience in the remote areas that overlook them.

Potential cumulative effects could also occur during the proposed 30-month construction period or during the decommissioning period, if the activities of the Proposed Action coincide with those of other projects. Construction workforces may use the same camping facilities for temporary housing, resulting in a cumulative demand that could result in limited spaces. Recreationists desiring to use these facilities may be unable to do so due to lack of availability and/or they may experience adverse changes in the character of the campgrounds due to higher-than-normal levels of use. Projects subject to the DRECP would be required to implement CMAs that include compensation to enhance recreation operations, recreation facilities or opportunities, reducing the cumulative effects of the use of campgrounds.

No Action Alternative. Because construction and project development would not occur under the No Action Alternative, there would be no contribution to cumulative effects.

4.12.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are 3 APMs relevant to transportation and public access (Section 2.2.7, Chapter 2). Table 4.12-1 explains how these measures reduce project effects, and how they relate to mitigation measures recommended below.

Table 4.12-1. Applicant Proposed Measures for Recreation

APM #	APM Text	Explanation
APM-44	Avoid Tier 1, Tier 2, Tier 3 roads/primitive roads/trails, Backcountry Byways, and other significant linear features. If avoidance is not practicable, relocate access to the same or higher standard and maintain the recreation setting characteristics and access to recreation activities, facilities, and destination.	Mitigation Measures RC-1 and RC-2 are recommended to provide specific protection or compensation for recreational use of open routes.
APM-45	If residual impacts to Tier 1 and Tier 2 roads/primitive roads/trails, Backcountry Byways, or other significant linear features cannot be protected and maintained, commensurate compensation in the form of an enhanced recreation operations, recreation facilities or opportunities will be required.	
APM-48	For the designated vehicle routes directly impacted by activities (includes modification of existing route to accommodate industrial equipment, restricted access or full closure of designated route, pull outs, and staging areas to the public, etc.), mitigation will include the development of alternative routes to allow for continued vehicular access with proper signage, with a similar recreation experience. In addition, mitigation will also include the construction of an "OHV touring route" which circumvents the activity area and allows for interpretive signing materials to be placed at strategic locations along the new touring route, if determined to be appropriate by BLM.	

All alternatives except for No Action Alternative would result in some preclusion of access within the site boundary; thus, an incremental reduction of recreation opportunities cannot be avoided. However, the magnitude of the project-specific impact is limited because the site is not a unique or important recreation resource. Also, public access to other public lands in the project area has been retained.

Indirect effects of the Proposed Action to recreation due to noise, dust, and visual effects would be reduced by implementing mitigation measures presented in those sections and listed below.

- MM AQ-SC-3, Construction Fugitive Dust Control (Previously PSPP MM AQ-SC-3)
- MM AQ-SC-4, Dust Plume Response Requirement (Previously PSPP MM AQ-SC-4)
- MM AQ-SC-7, Operation Dust Control Plan (Previously PSPP MM AQ-SC-7)
- MM NOISE-4, Noise Restrictions (Previously PSPP MM NOISE-4)
- MM NOISE-6, Construction Restrictions (Previously PSPP MM NOISE-6)
- MM VIS-1, Surface Treatment of Project Structures and Buildings (Previously PSPP MM VIS-1)
- MM VIS-2, Revegetation of Disturbed Soil Areas (Previously PSPP MM VIS-2)
- MM VIS-3, Temporary and Permanent Exterior Lighting (Previously PSPP MM VIS-3)
- MM VIS-4, Project Design (Previously PSPP MM VIS-4)
- MM BLM-VIS-2, Night Lighting (Previously PSPP MM BLM-VIS-2)

Mitigation Measures RC-1 (Prevent Blockage of Open Route CD952) and RC-2 (Provide Interpretive and Informational Signs) would supplement the requirements of APMs 44, 45, and 48, which provide for avoidance or relocation of roads and trails, and compensation in the form of enhanced recreational facilities or interpretive signs.

Mitigation Measure RC-1 (below) is recommended to prevent the blockage of Route DC952, which runs from the northwest to southeast through the Project. There are no existing alternate routes available and closure of these routes would affect motorized recreation touring between Desert Center and Blythe. Because portions of Route DC952 are located just within the proposed project fenceline, it would be closed to the public due to obstruction by Project fences. Mitigation Measure RC-1 recommends the relocation of the project fenceline to avoid blockage of this route. This relocation would result in a reduction of the area within the fenceline of less than 30 acres.

Mitigation Measure RC-2 is recommended to compensate for loss of DC950 by providing recreational signage along the remaining open routes.

RC-1 **Prevent Blockage of Open Route DC952.** The intent of this measure is to allow continuous recreational access to DC952 during project construction and operation. The Applicant shall revise the design of the project fenceline so it does not cross DC952, and leaves at least 10 feet of undisturbed space between the edge of the road and the project fence. During construction, the road shall not be permanently blocked by materials or vehicles, allowing access from the Corn Springs Road exit from I-10.

RC-2 **Provide Interpretive and Informational Signs.** To compensate for Palen Solar Project blockage of existing open roads, the Applicant shall ensure continued access for OHV use on route DC502. The Applicant shall coordinate with BLM staff to provide funding for interpretive panels explaining the solar project and its benefits, and providing signs showing all open routes within a two-mile radius of the Project. Open routes shall be marked with carsonite route marker posts that are within sight of each other.

4.12.5 Residual Effects after Implementation of Mitigation Measures

The conversion of public land to support the Project would result in a loss of up to approximately 4,200 acres within the site boundary that otherwise could support dispersed recreational activities, opportunities and experiences.

Additionally, even with implementation of the mitigation measures listed above, residual indirect effects to recreationists would remain especially for noise and visual resources.

4.12.6 Unavoidable Adverse Impacts

The Proposed Action would preclude public access to and across the site (as a result of security fencing); however, as noted above, because the site has a limited recreational use, this effect would be minor. APM-44 would ensure that roads and trails be avoided were feasible and relocated where avoidance is not feasible, reducing this impact. Loss of routes is addressed in Section 4.16, Transportation and Public Access. Indirect, long-term and unavoidable impacts to recreation would occur, the most notable of which would be as a result of the visual change due to the Project. No mitigation measures are available that would reduce the effects.

4.12.7 CEQA Significance Thresholds and Determinations

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the Proposed Action and alternatives would have significant impacts on recreation if they would:

REC-1 Increase the use of existing neighborhood and regional parks or other recreation facilities such that substantial physical deterioration of the facilities would occur or be accelerated; or

REC-2 Include recreation facilities or require the construction or expansion of recreation facilities which might have an adverse physical effect on the environment.

REC-1 Increased Use of Recreation Facilities

The current recreational use of the project site is limited and construction and operation of the Proposed Action, the Reduced Footprint Alternative, or the Avoidance Alternative would not substantially increase the use of recreation facilities. However, fencing of up to approximately 3,881 acres of land currently open to recreation we prevent the use of some existing open routes, and could lead to higher user levels on adjacent public lands open for recreation use. This expanded use could lead to loss of some native vegetation, wildlife habitat fragmentation or loss, elevated soil loss, increases in noise, and possible temporary declines in air quality from more

concentrated vehicle use in a smaller available area. The loss of open routes is a potentially significant impact that requires mitigation; Mitigation Measures RC-1 (Prevent Blockage of Open Route DC952) and RC-2 (Provide Interpretive and Informational Signs) would reduce the severity of this lost recreational opportunity to less than significant levels.

Given the low recreation use on the project site and the large acreage open to recreation throughout Eastern Riverside County, impacts from displacement at the project site would be less than significant.

During construction, workers might relocate to the project vicinity and use either local recreation facilities or camp in the BLM LTVAs. The minimal recreational use by a small number of temporary construction workers over the two-year construction period would not lead to substantial or accelerated physical deterioration of recreational facilities. A less-than-significant impact would occur.

REC-2 Construct Recreation Facilities

The Proposed Action, the Reduced Footprint Alternative, or the Avoidance Alternative would not result in construction of any recreation facilities that might adversely affect the environment. No impact would occur.

Cumulative Impacts

There are no recreation facilities or specific recreational attractions on the project site. The Desert Sunlight and Genesis solar projects are operational near the Palen site. Currently, two energy facilities are undergoing NEPA review in this region of Eastern Riverside County, and many other energy projects are in varying stages of development. Potential cumulative effects could occur during the proposed 30-month construction period or during the decommissioning period, if the activities of the Proposed Action, the Reduced Footprint Alternative, or the Avoidance Alternative coincide with those of other projects. Construction workforces may use the same camping facilities for temporary housing, resulting in a cumulative demand that could result in limited spaces. Recreationists desiring to use these facilities may be unable to do so due to lack of availability and/or they may experience adverse changes in the character of the campgrounds due to higher-than-normal levels of use. However, given the large amounts of recreational resources along the I-10, it is unlikely that the temporary cumulative increase in workers in the area would lead to substantial or accelerated physical deterioration of recreational facilities (Significance Criterion REC-1) or the construction of any recreation facilities that might adversely affect the environment (Significance Criterion REC-2). Therefore, neither the Project nor the alternatives would contribute to a cumulative impact to recreational facilities under CEQA.

While the Project, the Reduced Footprint Alternative, or the Avoidance Alternative would not contribute to a significant cumulative impact under Significance Criterion REC-1 and REC-2, the effects of existing and proposed projects in the vicinity of the Palen Solar Project or alternatives could have cumulatively considerable impacts on the nearby wilderness areas and other designated recreation areas in the I-10 Corridor primarily associated with visual impacts and change in character. The contribution of the Proposed Action or alternatives to cumulative impacts would be significant because, with the many other proposed solar projects, it would change the existing character of the area and result in a diminished wilderness experience in nearby designated conservation areas.

4.13 Social and Economic Impacts

4.13.1 Impact Assessment Methodology

The Palen Solar Power Project (PSPP) Plan Amendment/Final Environmental Impact Statement (PA/FEIS, Section 3.13) describes that the origin of project construction workers is a central factor in determining the magnitude and extent of potential socioeconomic impacts to the local economy and communities associated with the Proposed Action (BLM, 2011). If insufficient local employment is available to staff the project facilities, then the Project could attract individuals to relocate to the area either temporarily or permanently, which could result in an increased demand for housing and local services and temporarily disrupt some aspects of the local communities serving the Project (community of Desert Center and City of Blythe). At this time, these key social and economic issues are based on comments received during the public scoping and outreach efforts and the analysis of social and economic impacts of other renewable energy projects within the California desert.

This socioeconomic analysis examines the available skilled labor workforce within the regional and local study areas, as well as the availability of temporary housing and public services. This analysis will also evaluate whether an increased demand in public services may occur as a result of the Project, and the likely effects that a greater demand would have on existing services and facilities.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.13.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.13.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. None of the APMs are relevant to social and economic impacts.

4.13.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

Economic Impacts

Construction of the Proposed Action would be similar to the approved PSPP, given that it is located at the same site and would require a similar, although slightly reduced construction period (30 months for the Proposed Action versus 39 months for the PSPP). The Proposed Action would also require a smaller construction workforce than the PSPP (175 average daily workers versus 566 average daily workers for the PSPP), as well as a smaller workforce during the period of peak employment (700 workers versus 1,145 for the PSPP). During operation, the Project would employ up to 12 full-time staff. Given the large construction workforce,

construction employment and project spending would be the primary direct economic impact, although this impact would be temporary. As the project site is not currently developed with any significant economic use, the construction activities associated with the Proposed Action would represent a beneficial economic impact adding new employment and spending to the local economy.

Adverse indirect socioeconomic impacts may occur within the local communities if a project causes significant in-migration that the existing local housing, infrastructure and/or other public services cannot support. This impact is more likely to occur in rural areas such as Blythe and/or for projects with more skilled/specialized job requirements. Table 4.13-1 shows Year 2006-2016 occupational employment projections for the Riverside–San Bernardino–Ontario MSA[1] by construction labor skill, as presented in the PSPP PA/FEIS Section 4.13 (BLM, 2011). The primary trades required for construction of the Proposed Action will include laborers, craftsmen, supervisory personnel, supply personnel, and construction management personnel. Table 4.13-1 shows that there is a very large population of suitably skilled construction workforce for the Proposed Action currently living within Riverside and San Bernardino Counties.[2]

Table 4.13-1. Total Labor by Skill in Riverside–San Bernardino–Ontario MSA (2006 and 2016 Estimate)

Trade	Riverside–San Bernardino–Ontario MSA 2006	Riverside–San Bernardino–Ontario MSA 2016
Operator	4,790	5,460
Construction Laborer	27,930	32,080
Carpenter	28,850	32,390
Plumber/Pipefitter/Steamfitter	4,630	5,330
Electrician	6,740	7,600
Cement Finisher	4,110	4,690
Ironworker	19,460	20,800
Machinist	2,630	2,960
Supervisor, Construction and Extraction Worker	10,990	12,380

Source: BLM, 2011; CEC, 2010

The PSPP PA/FEIS and CEC RSA concluded that the majority of construction workers for the PSPP would come from within the regional study area, and that up to 15 percent of construction workers could seek local lodging in the project area during the workweek (CEC, 2010). Based on this assumption, it is possible that during the peak construction period for the Proposed

1 Metropolitan Statistical Areas (MSA) are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by Federal and State statistical agencies in collecting, tabulating, and publishing socioeconomic statistics. The Riverside–San Bernardino–Ontario MSA consists of Riverside and San Bernardino Counties combined. As such, the MSA population and labor force estimates include a major portion of individuals residing outside the likely daily commuting range from the site.

2 Given its more rural character and the far smaller size of its labor force, only a very small proportion of future construction workers would be expected to originate from La Paz County in Arizona. For this analysis, it is conservatively assumed that all construction workers for the PSPP would be California residents.

Action, up to 105 workers could seek local lodging (assuming peak workforce of 700 workers), with the remaining workforce commuting to the project site.

Based on the data provided in Section 3.13 of this SEIS, in-migration of a portion of the construction workforce could be accommodated within the available hotel rooms and housing vacancies in the nearby cities of Blythe, Indio, and Palm Springs (combined total of 7,072 hotel rooms, and 18,601 housing vacancies), in addition to the other communities within a two-hour commute of the project site (see Tables 3.13-3 and 3.13-4, Section 3.13). Because construction workers would be expected to be from the neighboring communities or to be accommodated in the available hotel and housing vacancies, a minimal increase in demand for utilities and public services would be expected as a result of the Project. However, it should be noted that published data on vacancies was obtained from the U.S. Census and may not account for temporary seasonal housing demand changes often observed in the desert area from "snowbird" occupants during the winter months. While temporary demand may affect the affordability of temporary and permanent housing, many other market factors significantly affect housing cost. Because the construction period is estimated at 30 months, the affect this temporary demand from the Project may have on housing cost in the area is unknown but would not be permanent. While the Project is expected to directly affect the availability of transient housing, any long-term effects to the social and economic conditions of the local areas would be speculative to assess given the temporary nature of the Project and the likelihood of local hiring to the maximum extent possible.

Construction of the Proposed Action would create a temporary, positive impact on the local economic base and fiscal resources. Construction workers' wages and salaries would provide additional income to the area, as would expenditures within the local and regional study areas for construction materials and services. As described in the PSPP PA/FEIS, Section 4.13, an IMPLAN input-output model was used to estimate economic impacts from the PSPP. The IMPLAN analysis calculated that construction spending for the PSPP would generate an average of $67.3 million in annual spending on construction labor within the regional study area for the duration of the construction period (BLM, 2011). While the Proposed Action would employ 391 less average daily workers and require a shorter construction period (i.e., nine months less) than the PSPP, the Proposed Action would still be expected to create a beneficial effect on the regional economy through increased expenditure of wages for goods and services. In terms of economic output impacts, the primary local industries that would benefit the most include the following: rental housing, architectural and engineering services, wholesale and retail trade businesses, real estate establishments, physicians and other medical professionals, food service, and hotel/motel businesses (BLM, 2011).

Social Impacts

The PSPP PA/FEIS states that the additional new income for the local economy from the Project would have a positive, but short-term, contribution towards supporting local business and maintaining the economic vitality of the City of Blythe and other neighboring communities (BLM, 2011). Increased local employment opportunities would improve residents' standard of living and could help retain younger residents who otherwise would be more likely to leave the community if there are insufficient local employment opportunities. The local community's positive social

attitudes to the Proposed Action may generally be expected to increase based on the extent that residents are employed (either directly or indirectly) or otherwise benefit from the Project.

While project-related in-migration of new residents could affect the social character of the local study area, the magnitude of the in-migration would need to be relatively substantial for the social environment to be noticeably altered. Furthermore, social changes typically require, or are most commonly associated with, permanent changes to the community's composition and/or attitudes rather than as the result of short-term influences or changes.

Alternative 1 – Reduced Footprint Alternative

Construction of Alternative 1 would require a level of employment similar to the Proposed Action in regards to construction schedule and employment. As such, the direct and indirect economic benefit of employee compensation and spending would be comparable to the Proposed Action. Similarly, the economic benefits of construction-related spending (e.g., on materials, fuels, and other locally sourced products and services) would create a temporary, positive impact on the local economic base and fiscal resources.

The majority of construction workers for Alternative 1 would come from within the regional study area. As described for the Proposed Action, it is possible that up to 15 percent of construction workers could seek local lodging in the project area during the workweek. Based on the data provided in Section 3.13, in-migration of a portion of the construction workforce could be accommodated within the available hotel rooms and housing vacancies in the nearby cities of Blythe, Indio, and Palm Springs, in addition to the other communities within a two-hour commute of the project site (see Tables 3.13-3 and 3.13-4, Section 3.13). Because construction workers would be expected to commute from the neighboring communities or to be accommodated in the available hotel and housing vacancies, a minimal increase in demand for utilities and public services would result from Alternative 1.

The additional new income for the local economy from Alternative 1 would have a positive, but short-term, contribution towards supporting local business and maintaining the economic vitality of the City of Blythe and other neighboring communities. Overall, Alternative 1 would have a minor and largely positive impact on the social character of the local study area that would be comparable to the Proposed Action.

Alternative 2 – Avoidance Alternative

Construction of Alternative 2 would require a smaller level of effort than the Proposed Action in regards to construction schedule and employment. Given that this 200 MW alternative would be less than half the size of the proposed 500 MW project, the direct and indirect economic benefit of employee compensation and spending resulting from Alternative 2 would be less. Similarly, the economic benefits of construction-related spending (e.g., on materials, fuels, and other locally sourced products and services) would be less pronounced than under the Proposed Action given the smaller extent of Alternative 2.

The majority of construction workers required for Alternative 2 would come from within the regional study area. As described for the Proposed Action, it is possible that up to 15 percent of construction workers could seek local lodging in the project area during the workweek. Based

on the data provided in Section 3.13, in-migration of a portion of the construction workforce could be accommodated within the available hotel rooms and housing vacancies in the nearby cities of Blythe, Indio, and Palm Springs, in addition to the other communities within a two-hour commute of the project site (see Tables 3.13-3 and 3.13-4, Section 3.13). Because construction workers would be expected to commute from the neighboring communities or to be accommodated in the available hotel and housing vacancies, a minimal increase in demand for utilities and public services would result from Alternative 2.

Although Alternative 2 would generate less income for the local economy than the Proposed Action given its reduced construction effort, this alternative would create a positive contribution towards supporting local business. Overall, Alternative 2 would have a minor and largely positive impact on the social character of the local study area.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.13.3 Cumulative Effects

Geographic Scope

The geographic scope for the cumulative analysis on social and economic impacts includes cumulative project sites that are within a two-hour commute of the Project. This radius is consistent with BLM's requirements for considering socioeconomic conditions and impacts on regional and local levels (see Section 3.13.2). Projects identified in Figure 4.1-1, Cumulative Projects: Existing and Foreseeable, and Tables 4.1-1 and 4.1-2 are included in this geographic scope.

Cumulative Impact Analysis

A cumulative social and economic impact would occur if the Project's incremental impact to the local economy or population were to contribute to a collectively significant effect from past, present, and future development projects within the geographic scope. As discussed in Section 4.13.2, the project site is not currently developed with any significant economic use, and proposed construction activities would represent a beneficial economic impact adding new employment and spending to the local economy.

As operation of the Project would require only up to 12 full-time staff, the Project's social and economic impacts would occur primarily during construction. The Project was found not to cause significant in-migration during the construction phase due to the large population of suitably skilled construction workforce currently living within Riverside and San Bernardino Counties.

However, if construction of foreseeable projects would overlap with that of the Project, the Palen Project would contribute to a cumulative increase in demand for a construction workforce, as well as for local housing. It is unlikely that all of the projects listed in Table 4.1-1 and Table 4.1-2 would be funded and constructed. As discussed in Section 4.1.4.2, larger projects may face permitting challenges, and projected schedules may be delayed due to the environmental review processes that would be required under CEQA and NEPA. It is difficult to determine which, if any, cumulative projects may be constructed during a similar timeframe as the Palen Project. As stated in the DRECP LUPA and Final EIS, which amends the CDCA Plan, cumulative projects identified within the planning area, which includes the proposed project site, were not anticipated to have overlapping construction time frames (BLM, 2015). Closer to Desert Center, it is possible that some of the projects' construction overlap but the projects closest to the Proposed Action have not begun CEQA or NEPA review. Therefore, it is unlikely that their peak construction time would overlap with the Proposed Action's peak construction. The DRECP Final EIS concluded that the influx of construction workers would not be likely to overlap and would not result in a cumulative impact. Similarly, the incremental social and economic impact from construction of the Proposed Action would be minor, and would not contribute to a collectively significant cumulative effect.

4.13.4 Mitigation Measures

Currently, no specific mitigation is proposed for potential social and economic effects. Public outreach and solicitation of comments from the adjacent communities of Desert Center, City of Blythe, and tribes (under tribal consultation and Section 106 Compliance) has been requested on the content of this Draft SEIS/EIR (refer to Chapter 5, Consultation and Coordination). Comments and input during outreach efforts may lead to specific mitigation being proposed in the Final SEIS/EIR.

4.13.5 Residual Impacts after Implementation of Mitigation Measures

Because no impacts were identified that required mitigation measures, no residual impacts would remain.

4.13.6 Unavoidable Adverse Impacts

No unavoidable adverse social or economic impacts would be expected to be associated with the Proposed Action or alternatives.

4.13.7 CEQA Significance Thresholds and Determinations

This section uses the criteria set forth in the CEQA Guidelines to identify project impacts and to evaluate their level of severity. The following analysis incorporates significance criteria from CEQA Guidelines Appendix G that pertain to Population/Housing, Public Services, and Utilities/Service Systems. For a discussion of impacts to parks and recreation facilities, see Section 4.12 (Recreation). For a discussion of impacts to stormwater facilities and water supplies, see Section 4.19 (Water Resources).

Population/Housing

Under CEQA, the Proposed Action would have a significant impact on population or housing if it would:

POP-1 Induce substantial population growth in an area either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure);

POP-2 Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere; or

POP-3 Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

These issues are addressed in the following paragraphs.

POP-1 Population Growth

The term "induce substantial population growth" is defined as workers moving into the project area because of project construction and operation, thereby encouraging construction of new homes or extension of roads or other infrastructure. As shown in Table 4.13-1, there is more than adequate local availability of construction workforce within the Riverside–San Bernardino–Ontario MSA for the Proposed Action, Reduced Footprint Alternative, or Avoidance Alternative. Since many of the construction workers would not be employed for specialized positions, employees would be predominately hired from the local area. Further, Tables 3.13-3 and 3.13-4 from Section 3.13 illustrate that a portion of the construction workforce could be accommodated within the available hotel rooms and housing vacancies in the nearby cities of Blythe, Indio, and Palm Springs. The nearest hotel in Blythe is about 37 miles from the project site. The nearest hotel in Indio is about 56 miles from the project site. The nearest hotel in Palm Springs is about 80 miles from the project site. These distances also roughly reflect how far local workers would commute one-way to get to the project site.

The 2013 PSEGS FSA also determined that although construction workers seeking RV and campground lodging in the study area could find only limited availability during January and September, there would be ample local housing (hotel/motel and housing units) available to any construction worker seeking to relocate during construction (CEC, 2013). Because of the availability of short-term housing in the local study area, construction of the Proposed Action or action alternatives would not temporarily induce substantial growth, so no impact would occur. Similarly, no impact would result from the No Action Alternative since the Proposed Action would not occur.

Since no impacts have been defined for Impact POP-1, no mitigation measures are required.

POP-2 Displace Housing

During project operation of the Proposed Action, an estimated 12 full-time staff would be employed. As shown in Table 3.13-2 (Section 3.13), vacancy rates within the local study area would offer these 12 employees sufficient available housing if they wish to relocate. It is

assumed that this is true for the Reduced Footprint Alternative and the Avoidance Alternative. No construction or operation-related impacts of the Proposed Action or action alternatives are expected for the regional and local study area housing supply, availability, or demand. Similarly, no impact would result from the No Action Alternative since the Proposed Action would not occur.

Since no impacts have been defined for Impact POP-2, no mitigation measures are required.

POP-3 Displace People from Housing

The site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative consists of vacant, undeveloped land, and no housing structures exist on the property. No residents or homes would be displaced by the construction or operation of the Project; therefore, no impact would occur. Similarly, no impact would result from the No Action Alternative since the Proposed Action would not occur.

Since no impacts have been defined for Impact POP-3, no mitigation measures are required.

Public Services

Under CEQA, the Proposed Action would have a significant impact on public services if it would:

PS-1 Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services: fire protection, police protection, or schools.

PS-1 Construction of New or Physically Altered Governmental Facilities

Construction and operation of the Proposed Action would not substantially impact existing public facilities including police, fire, or school services. As discussed in the PSPP PA/FEIS Section 3.13, and CEC RSA Section C.8, it is assumed that up to 15 percent of construction workers for power plants would seek local lodging in the project area during the workweek, while the remaining workers would commute from within the regional study area (CEC, 2010). Applying this assumption to the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative, up to 105 workers may seek local lodging (assuming peak workforce of 700 workers).

The Riverside County Sheriff's Department already serves the populations from which many construction workers may be commuting. The nearest Riverside County Sheriff's Department is approximately 36.5 miles east of the project site in Blythe, California. The service standard for the County Sheriff's Department is one officer per 1,000 population (CEC, 2013). As such, employment for construction and operation of the Proposed Action or action alternatives would not trigger a need for additional sheriff staffing or services. While the Project would increase the number of individuals within the local study area during construction, the increase would not be substantial and would not necessitate new or expanded law enforcement facilities or staff levels

within the regional or local study areas. During construction and operations there is the potential for onsite criminal activities such as theft and vandalism. To address this potential, the Project would include 8-foot chain link fences with additional barbed wire. Security during project operation would be enhanced with motion detectors, facility lighting, and cameras in key locations and security personnel would be on-call. Therefore, the Proposed Action and alternatives would not trigger the need for additional sheriff staffing or services due to theft or vandalism.

The Proposed Action and action alternatives would rely on both on-site fire protection systems and local fire protection services. The two closest Riverside County Fire Department (RCFD) stations to the proposed site are located off of I 10, approximately 10 miles west. The Lake Tamarisk Station (#49) is located at 43880 Lake Tamarisk in Desert Center and the Terra Lago Station (#87) is located at 42900 Golf Center Parkway in Indio. Response times for both the Riverside County Sheriff's Department and the Riverside County Fire Department are roughly 20 minutes to rural areas in Riverside County and one hour to wilderness areas (Riverside County EMS Agency, 2014). The on-site fire protection system includes permanent fire suppression water tanks that meet RCFD requirements, fire extinguishers, and fire-fighting equipment. Project staff training would include mock emergency exercises in cooperation with the local fire departments in order to test Emergency Response Plan preparedness and to drill the plant employees in the proper execution of emergency roles and tasks. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the RCFD. Given the ongoing coordination with RCFD to minimize fire risk at the project site, the Project would not substantially affect fire protection services.

As discussed in the 2013 FSA for the PSEGS, the socioeconomic analysis assumed that any construction workers seeking local temporary housing would not bring school-aged children seeking enrollment within the Palo Verde Unified School District (PVUSD), as workers would seek local lodging only during the workweek and return to their permanent homes on the weekend. Therefore, project construction would not require the need for new or expanded PVUSD school facilities or staff levels. During project operation of the Proposed Action, 12 employees may relocate to the local study area and may require PVUSD services for their families. The 2013 FSA for the PSEGS had concluded that a larger full-time operational staff of 25 (as required for the PSEGS) would not necessitate new or expanded school facilities or staff levels within the regional or local study areas (CEC, 2013). Similarly, potential services that may be required by a smaller operational workforce (12 employees for the Proposed Action versus 25 for the PSEGS) would not adversely affect school facilities or staff levels. It is assumed that the workforce for the Reduced Footprint Alternative and the Avoidance Alternative will also no adversely affect school facilities and staff levels.

Overall, the impacts to public services Impact PS-1 would be less than significant. No impact would result from the No Action Alternative since the Proposed Action would not occur.

Since no significant impacts have been defined for Impact PS-1, no mitigation measures are required.

Utilities/Service Systems

Under CEQA, the Proposed Action would have a significant impact on utilities or service systems if it would:

USS-1 Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;

USS-2 Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;

USS-3 Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments;

USS-4 Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs; or

USS-5 Comply with federal, state, and local statutes and regulations related to solid waste.

CEQA Criteria USS-1, USS-2, and USS-3 are not applicable to the Project or project alternatives. This is because the Proposed Action and action alternatives would generate minimal wastewater and solid waste. As discussed in Section 2.2.3, domestic wastewater generated during construction would be collected and disposed off-site in an approved facility. During project operation, domestic wastewater would be treated and disposed at the site using a septic disposal system consisting of septic tanks and leach field permitted by Riverside County Health District. As such, the Project and project alternatives would not exceed the wastewater treatment requirements nor affect the capacity of the Regional Water Quality Control Board. Further, the Project and project alternatives would not result in the construction or expansion of new water or wastewater treatment facilities.

USS-4 Be Served by Landfill with Sufficient Permitted Capacity

Construction activities of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative are estimated to generate non-hazardous waste (i.e., scrap wood, concrete, steel, glass, plastic, paper, insulating materials, aluminum, and food waste). Disposal of waste (including hazardous waste) would be completed by subcontractors in accordance with local, state, and federal regulations. California Code of Regulations Title 24, Part 11 (2013) Section 5.408.3 requires 100 percent of trees, stumps, rocks, and associated vegetation and soils resulting primarily from land clearing to be reused or recycled. EDF and its subcontractors would need to abide by this regulation.

In addition, operation of the Project and action alternatives is estimated to generate minimal non-hazardous waste (primarily food waste and other trash from operational staff). For all non-hazardous waste, recyclable materials would be separated and removed to recycling facilities; non-recyclable materials would be disposed of at a Class III landfill. Due to the smaller configuration of the Avoidance Alternative, this alternative would potentially generate less waste than the Proposed Action or Reduced Footprint Alternative. There are at least seven Class III

landfill facilities located in the project vicinity which provide sufficient capacity to handle non-hazardous wastes from project construction and operation over the life of the Project or project alternatives. The landfills include the Badlands Sanitary Landfill, Lamb Canyon Sanitary Landfill, Oasis Sanitary Landfill, Desert Center Landfill, Blythe Sanitary Landfill, El Sobrante Landfill, Monofill Facility, and the Chiquita Canyon Sanitary Landfill and information on the landfills is listed in Table 3.11-1. Therefore, the impact would be less than significant.

No impact would result from the No Action Alternative since the Proposed Action would not occur.

Since no significant impacts have been defined for Impact USS-4, no mitigation measures are required.

USS-5 Comply with Statutes and Regulations Related to Solid Wastes

Per the discussion in Section 2.2.4 of this document, all waste materials generated during construction would be disposed in accordance with local, state, and federal regulations. Project operations of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative would also involve the establishment of maintenance service agreements to manage trash and waste material disposal (see Section 2.2.5). Due to the smaller configuration of the Avoidance Alternative, this alternative would potentially generate less waste than the Proposed Action or Reduced Footprint Alternative. Given these waste disposal systems that would be developed for the Project and project alternatives, construction and operation activities result in a less than significant impact on solid waste disposal facilities.

No impact would result from the No Action Alternative since the Proposed Action would not occur.

Since no significant impacts have been defined for Impact USS-4, no mitigation measures are required.

Cumulative Impacts

A CEQA cumulative impact would occur if the Proposed Action or any action alternative made an incremental contribution to a potentially significant impact to the local population, public services, or utilities were to be cumulatively considerable. As discussed under Section 4.13.3, the geographic scope for a cumulative analysis on social and economic impacts includes cumulative project sites that are within a two-hour commute of the project site. Projects identified in Figure 4.1-1, Cumulative Projects: Existing and Foreseeable, and Tables 4.1-1 and 4.1-2 are included in this geographic scope.

Population/Housing. The Proposed Action and action alternatives were found not to cause significant in-migration due to the large population of suitably skilled construction workforce currently living within Riverside and San Bernardino Counties. Further, because of the availability of short-term housing in the local study area (see Tables 3.13-3 and 3.13-4 from Section 3.13), construction of the Proposed Action or alternatives would not temporarily induce substantial growth. If construction of existing or future projects would overlap with the Proposed Action or alternatives, the Proposed Action or alternatives would contribute to a

cumulative increase in demand for a construction workforce as well as for local housing. However, while the cumulative projects may have overlapping construction time frames but are unlikely to have the same peak construction time frames and workers would be able to move from one project to another. Therefore, the incremental contribution to population and housing from construction of the Proposed Action or alternatives would result in a less than significant cumulative impact.

Public Services. The future construction and operation of energy projects identified in Tables 4.1-1 and 4.1-2 would increase the demand placed on emergency services, such as police and fire. The DRECP LUPA and Final EIS concluded that this increased demand could potentially overwhelm emergency response providers if two emergencies occur at the same time (BLM, 2015). Given the anticipated long-term operation of these cumulative projects, construction and operation of the Proposed Action may contribute to a potentially significant cumulative impact on emergency services. Mitigation Measure WORKER SAFETY-7 (See Section 4.11.4 for the full text of the measure) would reduce the contribution of the Project to less than considerable.

As discussed in Section 4.13.3, the Proposed Action or alternatives would not be expected to contribute to in-migration. Therefore, the Proposed Action or action alternatives would not contribute towards an increased demand in school facilities that would result in a less than significant cumulative impact.

Utilities/Service Systems. Construction and operation of the Proposed Action or action alternatives would involve the establishment of maintenance service agreements to manage trash and waste material disposal. The cumulative renewable energy projects listed in Tables 4.1-1 and 4.1-2 would result in similar types of construction waste, as well as generate thousands of acres of industrial materials during decommissioning if the materials were not recycled. Under existing regulations, applicants are required to recycle their waste. Additionally, there are seven landfills in proximity to the project site and cumulative projects and each project would be required to have an agreement with the landfill providers. Therefore, there would be a less than significant cumulative impact as a result of the construction and operation of the Project or action alternatives.

As discussed in Section 4.13.3, the Proposed Action or action alternatives would not be expected to contribute to in-migration. Therefore, the Proposed Action or action alternatives would not contribute towards an increased demand in water or wastewater services and there would be a less than significant cumulative impact.

4.14 Soil Resources

4.14.1 Impact Assessment Methodology

The potential impacts discussed in this analysis relate to soil erosion and sand transport stemming from construction, operation and decommissioning of the Project. For assessing impacts of the Proposed Action and alternatives on sand migration, direct impacts are considered to be impacts within the project footprint and "sand shadows" that form within the site boundary as a result of on-site fences and other infrastructure. Indirect impacts would take the form of sand shadows that extend beyond the project disturbance boundary. Potential impacts of the Proposed Action and alternatives related to expansive and corrosive soils are analyzed in Section 4.11, Geologic Hazards.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.14.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.14.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. APMs relevant to soil resources are discussed in Section 4-19, Water Resources. APM-49 relevant to aeolian sediment is discussed in Section 4.14.4.

4.14.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action: Direct Effects

Erosion. Erosion is the displacement of solids (soil, mud, rock, and other particles) by wind, water, or ice and by downward or down-slope movement in response to gravity. The early stages of construction, especially site grading, excavation, and soil stockpiling would leave loose soil exposed to the erosive forces of rainfall and high winds. Due to its generally flat terrain, the Palen Solar Project site is not prone to significant mass wasting (gravity-driven erosion and non-fluvial sediment transport), but soil characteristics at the site do allow for the potential for wind and water erosion.

The Applicant proposes to use site preparation techniques to minimize the required volume of earth movement, such as "disc and roll" which uses equipment to till the soil over much of the solar facility and then roll it level and isolated cut and fill. As a result, compared with the PSPP solar trough project, the Palen Solar Project would require substantially less grading. Earthwork associated with the Project would include vegetation removal within the project area by scarification where necessary including the removal of any vegetation over 18 inches. Annual and perennial plants would remain.

Where temporary access is needed to install facilities, no removal of vegetation or grading would occur. Instead, equipment would drive over and around existing desert scrub vegetation. Site grading would be required for the major access roads, the inverter pad locations, and the ancillary facilities including parking area, material storage, operations and maintenance building and substation.

During construction, much of the project site, the access road, and the gen-tie line and access road would be disturbed, with a loss of some of the vegetation. During this time, there would be the highest potential for erosion and associated effects, including soil loss and increased sediment yields downstream from disturbed areas. Project grading and other site preparation techniques would affect all soil types present on the site (see Table 3.14-1 in Section 3.14 for a list of the soil types). The runoff potential of these soils ranges from negligible to slow except during torrential showers, the water erosion hazard ranges slight to moderate, and the wind erosion potential is high. While not all the project site would be graded, it is likely that most or all of it would be disturbed. Exposed soils due to grading, clearing, excavation, disc and roll, and soil stockpiling would increase the potential for erosion by exposing loose soil to wind and water. Small, localized disturbance would occur at specific locations were transmission structures would be installed.

Disturbance to existing soil crusts and/or loss of vegetation on the project site could result in a substantial increase in on-site wind- and waterborne-soil erosion. This is particularly true because the soils on the site have a high susceptibility to wind erosion. These potential impacts will be addressed by construction techniques and mitigation measures. Erosion protection management measures would be required by adherence to a Stormwater Pollution Prevention Plan (SWPPP) in compliance with the Clean Water Act and the California General Construction Permit (See Section 3.19.1). The Palen Plan of Development includes preliminary Stormwater Best Management Practices (see Appendix T) such as:

- Preserve existing vegetation where required and when feasible.
- The area of soil disturbing operations shall be controlled such that the EPC contractor is able to implement erosion control BMPs quickly and effectively.
- Non-active areas will be stabilized as soon as feasible after construction is complete and no later than 30 days after construction in that portion of the site that has permanently ceased.
- Control erosion in concentrated flow paths by applying erosion control blankets, check dams, erosion control seeding or alternate methods.
- Prior to the completion of construction, apply permanent erosion control to remaining disturbed soil areas.

The Applicant has also committed to ensuring sufficient erosion control materials be maintain onsite to allow implementation of the SWPPP (see Appendix T of the Plan of Development).

In addition to the BMPs anticipated by the Applicant, MM AQ-SC-3 (Construction Fugitive Dust Control) is required in the air quality analysis. This measure would increase soil stabilization and minimize wind erosion/fugitive dust by requiring dust control measures such as paving or stabilizing the main access roads, stabilizing unpaved roads, limiting traffic speeds on unpaved roads, covering soil storage piles, and implementing wind erosion control techniques. To ensure that dust suppression efforts would not increase offsite erosion, MM Soil&Water-1 (Drainage Erosion and Sediment Control Plan) identifies impact reduction techniques that would be used to ensure that water used for dust suppression would be contained within the construction area. With

the implementation of these measures, there would be no unavoidable adverse effects related to soil erosion associated with the construction of the Palen Solar Project.

Sand Transport Corridor. As part of the PSPP and the PSEGS environmental reviews, multiple studies regarding sand transport and the sand transport corridor were conducted. The studies considered both the direct impacts of the projects to sand migration from the project footprint and the indirect impacts to sand migration from the interruption of sand outside the site boundary as a result of the fences. The analysis of the Palen Solar Project relies on the conclusions from these studies (PWA, 2010; Centerline, 2013; and DRI, 2013).

Most sand transport (as opposed to dust transport) occurs close to the ground through the processes of rolling and saltation (bouncing of sand particles). This analysis assumes that all areas within the project boundary would lose their active sand dunes (dunes that have an active layer of mobile sand). The onsite loss of active dunes is an unavoidable result of project construction and operation. Therefore, this assessment focuses primarily on off-site indirect impacts. The primary off-site impact would be the disruption of sand being transported to the sand transport corridor.

Both the direct and indirect effects are discussed here. Indirect impacts are sand shadows that extend beyond the project boundary. Sand shadows are defined as areas where the upwind supply of sand is cut off by fences and other infrastructure, and therefore existing sand can be eroded downwind, resulting in the loss of the fine sand upon which dune habitats are dependent (PWA, 2010).

Palen Solar Power Project (PSPP). The 2011 FEIS analysis for the PSPP assumed that all areas within the project boundary would be directly impacted or lost as active sand dunes as the Project would include a perimeter sand fence that would be 30 feet high and designed to stop sand from entering the solar array. The analysis assumed that the sand fence would act as an effective barrier to sand transport and create a downwind effect where the wind removes fine sand but there is no replacement by sand from upwind. Over time, the existing sand dunes in the shadow area would be deflated (PWA, 2010). At a certain point downwind, the sand shadow disappears because diffusion replaces sediment into the area downwind of the fence obstruction. To quantitatively assess the area of sand shadow, PWA developed a numerical model of sand transport that predicted the areas of sand shadow in response to inputs of prevailing wind directions, distribution of wind around the mean, and the location of sand barriers. The percent sand reduction was overlaid on the Sand Transport Zones to calculate an area of impact; see Table 4.14-1. Figure 4.14-1, Sand Transport Zone and Alternatives, illustrates the Sand Transport Zones relative to each alternative.

Table 4.14-1. Direct and Indirect Effects to the Sand Dune Corridor

	PSPP*	Palen Solar Project	Reduced Footprint Alternative	Avoidance Alternative
Direct Effects Zone II (acres)	430	0	95	0
Direct Effects Zone III (acres)	540	870	737	68
Indirect Effects (acres)	1,133	421**	421**	0

* The PSPP acreages have been included for comparison purposes only.

** Due to the substantial work that was previously done for the sand transport corridor, a new study for the Palen Solar Project was not required. As the Palen Solar Project and the Reduced Footprint Alternative would have similar boundary as the PSEGS Project and had a similar fencing plan, the same acreage of indirect effects as was calculated for PSEGS was used for the Palen Solar Project and Reduced Footprint Alternative.

Source: BLM, 2010; Energy Commission, 2013.

The PSPP applicant contested these estimates and submitted its own estimate of indirect impacts from wind transport (Kenney, 2010). This estimate used the same prevailing wind data as the PWA analysis and the same prevailing wind direction but set a lower bar for impact. Both the PSPP Final EIS and the CEC Revised Staff Assessment based their mitigation requirements on the more conservative PWA estimates.

The 2010 and 2011 CEQA and NEPA documents evaluated alternatives that reconfigured the project boundaries to reduce impacts of the Proposed Action on the sand transport corridor and the associated dune habitat. The reconfigured alternatives reduced the intrusion of the projects into Zone 2 of the sand transport corridor, but either retained the same or increased the intrusion in Zone 3 relative to the proposed PSPP configuration. Therefore, some reductions in direct impact to Zone 2 were offset by increases in indirect impacts to Zone 3. The Palen Solar Project boundary is based on Reconfigured Alternative 2 Option 2 (called the Reconfigured Alternative 3 in the Energy Commission Decision).

Palen Solar Electric Generating System. The Draft Supplemental EIS analysis for PSEGS originally determined that with the use of the PSPP Reconfigured Alternative 2 (Option 2) boundary and elimination of the 30-foot wind fences, impacts to sand transport and dune habitat would be avoided (BLM, 2013). However, after publication of the document, further studies by both the Energy Commission and the PSEGS developer indicated that the PSEGS footprint and facility features, such as the size and number of pylons used to support heliostats, would have greater effects to the sand transport system than the PSPP Reconfigured Alternative, see Table 4.14-1. The Energy Commission report (DRI, 2013) noted that the model used to predict offsite impacts has limitations. Similarly, the report acknowledges that the prediction of the extent of onsite degradation was also limited but that the model was the best available information.

Palen Solar Project. As with PSPP and PSEGS, the Palen Solar Project would place infrastructure within the sand transport corridor. However, the Palen project was reconfigured to avoid direct impacts to Zone II. It would result in direct impacts to 870 acres of Zone III dunes and up to a maximum of an estimated 421 acres of indirect effects. The indirect effects were based on the PSEGS indirect effects as the Palen Solar Project footprint is within the PSEGS footprint and both proposed chain link fencing around the boundary and both solar technologies would require large numbers of piles/stands for the technologies. Both the chain link fencing and piles would act as barriers to sand transport. Given that the Palen Solar Project was refined to further avoid the sand transport corridor, the estimate of indirect effects is conservative.

The PSPP would have also created an impact on sand transport by eliminating the network of desert washes throughout the site and replacing them with engineered channels. Part of the sediment-delivery system that contributes to active sand dunes northeast of the site consists of fluvial depositional areas fed episodically by ephemeral streams. Finer fluvial sediments (typically sand size and finer) are mobilized in the sand transport corridor, which may be recharged with fine-grained sediment during large flood events. Project construction on the alluvial fans and alteration of stream channels by channelization may have reduced the amount of fluvial sediment reaching the depositional areas upwind of sand dunes. The Palen Solar Project eliminates the drainage control channels and would allow sheet flow through the site with the use of berms and swales only as needed. Additionally, APM-49, states that all facility components that alter hydrology would be

designed to maintain continued aeolian sediment sorting and transport to downwind deposition zones. This would further reduce the effects of the project on the sediment-delivery system.

Compared with the approved PSPP, the Palen Solar Project would have similar direct effects to the sand transport corridor, although reduced compared with the effects to Zone II, but greater indirect effects. As noted above, the model used to estimate the indirect effects is limited and additional study may indicate fewer indirect effects. Greater indirect effects are not anticipated given that the estimate of 421 acres is a conservative estimate.

Mitigation Measure BIO-20 (Sand Dune/Mojave Fringe-Toed Lizard Mitigation) would reduce the effects to the sand dunes and their associated habitat by requiring EDF to provide compensatory mitigation at a 3:1 mitigation ratio for direct impacts to stabilized and partially stabilized sand dunes and 0.5:1 mitigation for indirect impacts to stabilized and partially stabilized sand dunes (see Section 4.17.4 for the full text of the mitigation measure). Given the acres of direct and indirect effects to sand dunes, it is uncertain at this time whether sufficient compensation lands are available for purchase to satisfy this mitigation measure.

Proposed Action: Indirect Effects

Erosion. There would be minimal indirect effects due to erosion because the BMPs and mitigation measures are designed to reduce erosion and ensure that water used for erosion control would be contained within the project boundaries.

Sand Transport Corridor. The indirect effects of the Project to the sand transport corridor are combined with the discussion under Direct Effects, above. Table 4.14-1 presents the acreage of indirect effects for the Palen Solar Project.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would be located within the Palen Solar Project boundary but would reconfigure the Project to avoid the primary central wash that crosses the site from southwest to northeast. The configuration would leave a gap of up to 2,300 feet surrounding the vegetated wash allows for sheet flow through this area.

Erosion. The direct effects of the Reduced Footprint Alternative would include erosion and impacts to the sand transport corridor. The direct and indirect effects of erosion would be substantially similar as those of the Proposed Action as the construction would be similar and the alternative would require an estimated 3,100 acres of permanent disturbance. MM AQ-SC-3 (Construction Fugitive Dust Control) and MM Soil&Water-1 (Drainage Erosion and Sediment Control Plan) would ensure that the alternative does not result in unavoidable adverse effects related to soil erosion.

Sand Transport Corridor. The direct and indirect effects of the Reduced Footprint Alternative on the sand transport corridor would be similar in nature but greater in acreage compared with the Proposed Action. Compared with the Proposed Action, the alternative would have greater acres of direct loss of sand transport corridor, more acres of loss of sand transport in Zone II and fewer in Zone III; see Table 4.14-1. Indirect effects are assumed to be the same. However, by avoiding the wash, the alternative would avoid any impacts to a primary part of the sediment-delivery

system that contributes to active sand dunes northeast of the project area which would reduce the loss of active sand dunes.

Because the alternative protrudes further into the sand transport corridor, indirect effects to the sand transport corridor maybe be slightly greater than those of the Proposed Action. Because the Reduced Footprint Alternative remains within the PSEGS boundary footprint, it is estimated that the indirect effects would be up to 421 acres.

As with the Proposed Action, APM-49 and Mitigation Measure BIO-20 (Sand Dune/Mojave Fringe-Toed Lizard Mitigation) would reduce the effects to the sand dunes and their associated habitat.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would be located within the Palen Solar Project boundary but would eliminate permanent infrastructure other than minor excursions on the sand dunes and would eliminate permanent infrastructure on the wash woodland. This would reduce the alternative to approximately 1,620 acres.

Erosion. The direct effects of the Reduced Footprint Alternative would include erosion and impacts to the sand transport corridor. The direct and indirect effects of erosion would be similar as those of the Proposed Action as the construction would be similar and the alternative would require an estimated 1,620 acres of permanent disturbance. Because the permanent disturbance area would be substantially reduced compared with the Proposed Action, the alternative would result in less ground disturbance and less risk of wind and water erosion. MM AQ-SC-3 (Construction Fugitive Dust Control) and MM Soil&Water-1 (Drainage Erosion and Sediment Control Plan) would ensure that the alternative does not result in unavoidable adverse effects related to soil erosion.

Sand Transport Corridor. The Avoidance Alternative would result in no direct or indirect loss of the sand transport corridor. Because the alternative would include placement of numerous piles and other infrastructure throughout an estimated 1,620 acres, it would still have some potential to reduce or eliminate part of the sediment-delivery system that contributes to active sand dunes northeast of the project area but this effect would be minimal. APM-49 would reduce this effect by ensuring the alternative be designed to maintain continued aeolian sediment sorting and transport.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.14.3 Cumulative Effects

Geographic Scope

The geographic extent for the consideration of cumulative effects to soils is a 1,000-foot buffer around the Project for erosion. This is because impacts resulting from erosion are localized in nature and are unlikely to extend beyond the actual project boundaries unless an extreme event results in substantial downstream erosion. The geographic area considered for impacts to sand transport is the entire sand transport corridor in the Chuckwalla Valley. Tables 4.1-1 and 4.1-2 list existing and reasonably foreseeable projects in the region that could impact soils. No projects are located within a 1,000-foot buffer of the Project such that there would be no cumulative impact to erosion. Existing and reasonably foreseeable projects that could impact the sand transport corridor are the Blythe PV Project, Genesis Solar Energy Project, Desert Sunlight Solar Project, SCE Colorado River Substation, Desert Quartzite Solar, Crimson Solar, and SunPower Project. For projects that have already undergone environmental review, these documents were reviewed for any effects to the sand transport; for projects that have not been reviewed, the projects were mapped against the geomorphic layer for sand from the DRECP. As noted in the DRECP, which amends the CDCA Plan, project specific mapping may change this determination.

Cumulative Impact Analysis

The cumulative projects listed above have or could impact the Chuckwalla Valley sand transport corridor through directly or indirectly impeding sand transport, reducing the amount of sand that flows through the Chuckwalla Valley. Fencing and other infrastructure associated with the projects would impede sand transport and affect valuable habitat within this corridor, resulting in a cumulative blocking of the corridor along the western and eastern sides. While mitigation for existing projects or project under review and CMAs from the DRECP for future projects would reduce the effects of each individual renewable project permitted to the extent practicable, there would likely be residual cumulative effects.

4.14.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the Applicant Proposed Measures (APMs). There is one APM relevant to sand transport (Section 2.2.7, Chapter 2). Table 4.19-4 explains how this measure reduces project effects, and how it relates to mitigation measures below.

Table 4.14-2. Applicant Proposed Measures for Soil Resources

APM #	Text	Explanation
APM-49	All facility components that alter site hydrology will be designed to maintain continued aeolian sediment sorting and transport to downwind deposition zones, with designs subject to approval by BLM.	APM-29 would reduce the effects of the Project on the sand transport corridor and has been incorporated into the analysis of the Project.

No new mitigation measures would be required for soil resources. The following mitigation measures proposed for other resources would reduce the effects to erosion and the sand transport corridor. The full text of each mitigation measure is presented in the referenced section.

- **MM AQ-SC-3** (Previously PSPP MM AQ-SC-3): Construction Fugitive Dust Control (see Section 4.2, Air Resources).
- **MM WR-1** (Previously PSPP MM SOIL&WATER-1): Drainage Erosion and Sediment Control Plan (DESCP) (see Section 4.19, Water Resources)
- **MM WIL-10** (Previously PSPP MM BIO-20): Sand Dune/Mojave Fringe-Toed Lizard Mitigation (see Section 4.21, Wildlife Resources)

4.14.5 Residual Effects after Implementation of Mitigation Measures

With implementation of the mitigation measures defined in Section 4.14.4, the effects of construction, operation and maintenance, and decommissioning would be reduced. Residual effects to the sand transport corridor could remain as there is limited information available regarding the downstream effects of interruption of the sand transport corridor, and insufficient information regarding available mitigation lands for sand transport.

4.14.6 Unavoidable Adverse Impacts

Impacts to the sand transport corridor and local sand transport processes would be unavoidable and adverse.

4.14.7 CEQA Significance Thresholds and Determinations

Following are the CEQA significance thresholds for soils impacts from the CEQA Appendix G Checklist. The Project and alternatives would have a significant impact on soil resources if they would:

S-1 Result in substantial soil erosion or the loss of topsoil;

S-2 Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or

S-3 Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

As the Proposed Action and alternatives would all be located at the same site and would involve similar construction, operations and maintenance, and decommissioning techniques, the significance determination for soils would be the same for the Proposed Action and the Reduced Footprint Alternative, and Avoidance Alternative.

S-1 Soil Erosion

Soils at the project site would be susceptible to erosion, especially once soil crusts are disturbed. Implementation of MM AQ-SC-3 (Construction Fugitive Dust Control) would increase soil stabilization and minimize wind erosion/fugitive dust. MM Soil&Water-1 (Drainage Erosion and Sediment Control Plan) would ensure erosion reduction techniques are incorporated and that erosion does not leave the site. With the implementation of these measures, impacts related to soil erosion would be less than significant.

Under the No Action Alternative, the Palen Solar Project would not be built so there would be no impact due to soil erosion.

S-2 Expansive Soil

Expansive soil is predominantly fine grained and contains clay minerals capable of absorbing water in their crystal structure. It is often found in areas that were historically a floodplain or lake area, but can also be associated with some types of shale, volcanic ash or other deposits, and can occur in hillside areas. Expansive soil is subject to swelling and shrinkage, varying in proportion to the amount of moisture present in the soil. As water is initially introduced into the soil (by rainfall or watering), expansion takes place. If dried out, the soil will contract, often leaving small fissures or cracks. Excessive drying and wetting of the soil can progressively deteriorate structures that are not designed to resist this effect, and can lead to differential settlement under buildings and other improvements. The surficial soils at the site generally consist of predominantly granular soils that do not contain much clay and are not subject to significant expansion hazards.

The potential for expansive soils does not create an adverse effect in the project area and would not create a safety risk to workers. Soil characteristics would be further evaluated as part of the final geotechnical design. If required, design parameters would be incorporated into the final facility design. Additionally, few workers would be permanently onsite; therefore, the Proposed Action and action alternatives would not create a substantial risk to life or property due to expansive soils (CEC, 2010, Section C-9, Appendix B, Waste Discharge Requirement Facts for Waste Discharge). Overall, the impact from expansive soils in the project area to life and property would be less than significant.

Under the No Action Alternative, the Palen Solar PV Project would not be built so there would be no impact due to expansive soils.

Since no significant impacts have been defined for Impact S-2, no mitigation measures are required.

S-3 Septic Field Support

The Proposed Action and all action alternatives would include a septic disposal system consisting of septic tanks and a leach field. No soils within the project area have been identified as unsuitable for septic systems; therefore, there would be no impacts under this criterion. Similarly, there will be no impact under the No Action Alternative since under this alternative, the Palen Solar Project would not be built.

Since no impacts have been defined for Impact S-2, no mitigation measures are required.

Cumulative Impacts

As noted in Section 4.14.3, there would be no existing or foreseeable projects in close enough proximity to result in a cumulative impact due to soil erosion. As noted above, the Project and action alternatives would have no significant impacts due to expansive soil and would not be located on soils unsuitable for septic systems; therefore, project construction and operation would not contribute to cumulative impacts.

4.15 Special Designations

This section describes and evaluates the effects related to special designations of the Palen Solar Project (Proposed Action), the No Action Alternative, and other alternatives.

This analysis incorporates the special designations analysis from the 2011 PA/FEIS and 2010 RSA, Section 4.15.1. However, it modifies the analysis to account for the updated environmental baseline and the PV technology.

4.15.1 Impact Assessment Methodology

The California Desert Conservation Area (CDCA) Plan is a 25 million-acre expanse of land in southern California designated by Congress in 1976 through the Federal Land Policy and Management Act (FLPMA). The BLM administers about 10 million acres in the CDCA. The NECO Plan is a landscape-scale, multi-agency planning effort that protects and conserves natural resources while concurrently balancing human uses of the California portion of the Sonoran Desert ecosystem, such as the Colorado Desert. The NECO Plan amended the CDCA Plan. The Desert Renewable Energy Conservation Plan (DRECP) is a landscape-scale, multi-agency planning effort that adopts a conservation strategy and a streamlined process for the permitting of renewable energy and transmission development on BLM-managed lands, while integrating other uses and resources. The DRECP amended the CDCA Plan.

The CDCA Plan, NECO Plan, and DRECP are the comprehensive Federal land use and planning document for BLM and other public lands in the project area. The NECO Plan incorporated 23 wilderness areas, totaling over a million acres, that were established by the CDCA. Areas of Critical Environmental Concern (ACECs) were designated within the NECO Plan and DRECP for further development of site-specific conservation management actions. The DRECP also designated lands under the National Landscape Conservation System and Special Recreation Management Areas in the region. In addition to conservation, the DRECP designated Development Focus Areas (DFA); the Proposed Action is located in a DFA.

This section was prepared using information from the CDCA/NECO/DRECP Plans. Impacts to recreational resources are discussed in visual resources are further discussed in Section 4.18, Visual Resources.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Any applicable mitigation measures are referenced by title and number in the discussion of effects (Section 4.15.2). Because no mitigation measures are recommended, none are presented in Section 4.15.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. None of the APMs are relevant to special designations.

4.15.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The Project would consist of a 500 MW solar photovoltaic facility that will span over 3 solar fields over approximately 4,200 acres of public land administered by the BLM. A 230-kilovolt (kV) generation interconnection line (gen-tie line), and an operations and maintenance facility are also proposed for construction and operation at the project site. The project site is located within the Riverside East Solar Energy Zone (SEZ) of BLM's Western Solar Plan, as designated in the Solar Programmatic Environmental Impact Statement (PEIS) by the BLM. SEZs are "developable" areas for solar power development. The approval of the DRECP LUPA resulted in changes to land use designations to areas near the project site including designating the site as part of a Development Focus Area (DFA). DFAs are areas on which activities related to solar, wind, and geothermal development, operation, and decommissioning can occur. While the Project is not subject to the DRECP it remains in a DFA and SEZ.

Proposed Action: Direct Effects and Indirect Effects

There are no special designations on the proposed solar plant site other than the SEZ and DFA. However, two systems of federally managed lands are in the vicinity of project. Lands managed for multiple-use by the BLM are known as the *National System of Public Lands* and include designated wilderness areas (WAs), lands with wilderness characteristics, areas of critical environmental concern (ACECs), National Landscape Conservation System, and back country byways. Federally managed lands are known as the *National Park System* and pertain primarily to the Joshua Tree National Park at this project site.

Direct effects to these federally managed lands may occur during project construction or decommissioning from noise, fugitive dust, and lighting. These effects could reduce the experiences of recreational users in nearby designated ACECs, National Landscape Conservation System lands, and/or WAs. Indirect effects could also be noticeable; these effects primarily relate to the loss of pristine and expansive undeveloped desert vistas from these specially designated areas. These impacts are discussed in further detail in Section 4.9 (Noise), Section 4.2 (Air Resources), Section 4.12 (Recreation), and Section 4.18 (Visual Resources), respectively.

The primary protected areas that could potentially be directly or indirectly affected (as described above) are the Joshua Tree National Park, and several other special designation areas, described below.

The following are designated as California Desert National Conservation Lands (BLM, 2015); the nationally significant ecological, cultural and scientific values of these areas could be affected by a large development like the Palen Solar Project in the Chuckwalla Valley.

- **Palen-McCoy Wilderness and Chuckwalla Wilderness** both have significant scientific value. The setting in this Wilderness Area is important for documenting the impacts, habitat

shifts, and changes to biological diversity occasioned by climate change. Wilderness values from the southwestern portion of the Palen-McCoy Wilderness and the northeastern Chuckwalla Wilderness may be degraded by views over the Chuckwalla Valley, where construction dust would be visible, and the solar field would be developed.

- **Alligator Rock ACEC** has significant cultural, biological, and scientific resource value. The Alligator Rock area is designated as a National Register Site and is the site of the North Chuckwalla Mountains Petroglyph District, and the North Chuckwalla Prehistoric Quarry. The Project gen-tie would connect to the Red Bluff Substation just east of the ACEC's eastern edge, adding to the large existing nearby visible industrial facility, with construction noise and dust, as well as degradation of this historic resources in this unique cultural setting.
- **Palen Dry Lake ACEC** is adjacent to the southeastern part of the Project. It has significant cultural and biological resource value. It features several archaeological sites that are eligible for listing on the National Register of Historic Places (NRHP). The ACEC is the site of small disparate microphyll woodland habitats and includes 3,506 acres of lands that are managed to protect wilderness character. Mitigation Measure CUL-14 requires an update of the Palen Dry Lake ACEC Management Plan, to mitigate for the indirect effects of the Project on the ACEC. Mitigation Measure CUL-15 requires the recording of the Palen Pass as a Historic District, to mitigate for the cumulative effects of the Project on the region.
- **Chuckwalla ACEC** has significant cultural, scenic, vegetative, and wildlife values. It includes extensive microphyll washes and habitat for a variety of wildlife species. The ACEC is used extensively for outdoor recreation and has areas designated as a National Register District. A portion of proposed gen-tie line would be located within the Chuckwalla ACEC, impacting approximately 3.2 acres (120-foot-wide by 0.22-mile-long corridor). The ACEC, as defined in the CDCA as amended by the DRECP, is over 500,000 acres. Rights-of-way may be considered, up to an 0.5% disturbance cap.
- **Chuckwalla SRMA** is an area extensively used for recreation and is an area where very few modifications have been made to the landscape. The SRMA is heavily used for motorized recreation touring and other recreational activities such as hiking, camping, equestrian use, motorized touring, wildlife and wild flower viewing, sightseeing, and visiting cultural/historic sites. The Palen Solar Project would be visible from the northern areas of the SRMA, and dust from construction may attract attention during the construction phase.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative to the Proposed Action would eliminate use of the central desert wash that crosses the project site from southwest to northeast, dividing the Project into two separate solar fields. The effects of this alternative on special designations would be substantially similar to those described for the Proposed Action. However, since the new the permanent disturbance area would be 3,100 acres (about 26% smaller than the Proposed Action), the reduced acreage of project development resulting from this Reduced Footprint Alternative would result in shorter construction and less extensive impacts from noise, fugitive dust, and lighting. These reduced effects would benefit recreational users, as well as wildlife in the closest ACECs and SRMAs: Palen Dry Lake ACEC, Palen-McCoy Wilderness, Chuckwalla Mountains Wilderness, Alligator Rock ACEC, and Chuckwalla ACEC.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative to the Proposed Action would limit developable land based in accordance with the DRECP Conservation Management Actions (CMAs). The effects of this alternative would be similar to those described for the Proposed Action. However, the resulting area available for project development would be reduced to 1,620 acres (about 40% of the size of the Proposed Action). The Avoidance Alternative would result in less direct and indirect effects on users or sensitive wildlife in nearby designated ACECs, Wilderness Areas, and other special designations from noise, fugitive dust, lighting, and the presence of a new large industrial facility that would occur during project construction, operation, and decommissioning. In addition, this alternative would benefit the ecological and cultural integrity of these protected areas by upholding the management goals of the specially designated areas through the application of the CMAs now incorporated in the CDCA, as amended by the DRECP.

No Action Alternative

A denial of the ROW application CACA-48810 would result in the No Action Alternative since a ROW grant would not be authorized. There generally would be no direct or indirect impacts to special designations. The proposed project site would not be developed and other projects or linear facilities could potentially be developed at this location. The area is located within the Riverside East SEZ and would remain as a DFA. These land designations would be in effect for future projects. As a result, this site could be developed with activities related to solar, wind, and geothermal development, operation, and decommissioning. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.15.3 Cumulative Effects

Geographic Scope

The geographic extent for the cumulative effects to special designations is the DRECP Land Use Plan Amendment Decision Area and includes the projects described in Section 4.1.4 (Cumulative Impact Scenario) Tables 4.1-1 and 4.1-2. This analysis of potential cumulative effects to special designations includes the designations illustrated on Figure 3.15-1 (see Appendix A): those with the potential to be directly or indirectly affected by Project construction or operation.

Cumulative Impact Analysis

Potential cumulative impacts could occur for the entire duration of the Proposed Action, from the initiation of construction to the conclusion of facility closure and site restoration. The projects listed in Tables 4.1-1 and 4.1-2 may contribute to the impacts of Proposed Action and action alternatives to result in cumulative impacts to nearby ACECs, Wilderness Areas, National Landscape Conservation System lands, and the Chuckwalla Special Recreation Management Area. The temporary and permanent impacts from the Proposed Action or action alternatives would occur in conjunction with the future solar projects within the DRECP Development Focus Area (DFA). The solar projects now under review between Blythe and Desert Center would result in disturbance over 20,000 acres of desert habitat. These projects are listed in Table 4.17-3, and include Desert Quartzite, Crimson, Blythe Mesa, and SunPower's Arica Solar. These projects are nearly all in close proximity to (and visible from) to the Joshua Tree National Park, the

Palen-McCoy Wilderness Area, and the Chuckwalla ACEC. As described in Section 4.12, Recreation, taken together, these projects' effects would reduce the value of the nearby designated conservation areas and affect wilderness users' opportunities for solitude, naturalness, and unconfined recreation within these areas.

Overall, views from the surrounding areas will be degraded by the construction and operation of energy projects built in this DFA in eastern Riverside County. The degraded views would result from the addition of structures, fences and other features that could cause glint or glare or otherwise interrupt landscape views. In addition, these projects result in increased noise and dust generated by equipment required for construction and operation, motor vehicle use, or other worker-related activities and would add facilities and structures to the landscape that are not currently present. Any of these activities individually or in combination could cause some users to seek out other areas of the desert for their wilderness activities and experiences.

As discussed above, incremental impacts on areas with special designations resulting from the Project could combine with the incremental impacts of past, present, or reasonably foreseeable future actions to cause or contribute to a cumulative impact. However, the CDCA amendment defined by the DRECP has established protective designation of large areas, through the creation of additional ACECs and designation of National Landscape Conservation System lands. As a result, the CDCA amendments developed in the DRECP would offset the cumulative impacts that would be caused by solar energy development in the Desert Center area. Examples of these nearby conservation designations are the Palen Dry Lake ACEC (3,506 acres) Palen-Ford Playa Dunes ACEC (12,437 acres), and Chuckwalla ACEC (352,633 acres). The solar projects in the area would be located between these protected areas, but would have only very small direct effects (from the gen-ties to the Red Bluff Substation).

By designating certain lands as DFAs and allowing for the potential acceleration of the development of energy facilities and auxiliary structures within DFAs, the CDCA as amended by the DRECP ensures that the development impacts of these projects, will be contained within areas that have lower resource values. This concentration reduces the potential for increased development to occur broadly across the desert.

Because construction and project development would not occur under the No Action alternative, the Project would not contribute to cumulative effects.

4.15.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs to which the Applicant has committed. There are 7 APMs relevant to special designations (Section 2.2.7, Chapter 2). Table 4.15-1 explains how these measures reduce project effects, and how they relate to mitigation measures recommended below.

Table 4.15-1. Applicant Proposed Measures for Special Designations

APM #	Text	Explanation
APM-6	For activities that may impact Focus or BLM Special Status Species, implement the following measures for noise: ▪ To the extent feasible, and determined necessary by BLM to protect Focus and BLM sensitive wildlife species, locate stationary noise sources that exceed background ambient noise levels away from known or likely locations of and BLM sensitive wildlife species and their suitable habitat. ▪ Implement engineering controls on stationary equipment, buildings, and work areas including sound-insulation and noise enclosures to reduce the average noise level, if the activity will contribute to noise levels above existing background ambient levels. ▪ Use noise controls on standard construction equipment including mufflers to reduce noise.	APM-6 is supplemented by MM SD-2 (Funding Agreement) to further reduce temporary, indirect project impacts to the Joshua Tree National Park, especially due to construction activity noise.
APM-23	Develop partnerships to assist in the training of groups and individuals to participate in site stewardship programs.	APM-23 is supplemented by MM SD-3 (Signage and Guidance Plan) to further reduce temporary, indirect project impacts to the Joshua Tree National Park as a result of the influx of workers to the project site.
APM-44	Avoid Tier 1, Tier 2, Tier 3 roads/primitive roads/trails, Backcountry Byways, and other significant linear features. If avoidance is not practicable, relocate access to the same or higher standard and maintain the recreation setting characteristics and access to recreation activities, facilities, and destination.	APM-44 is supplemented by MMs SD-1 (Plan Review), SD-2 (Funding Agreement), and SD-3 (Signage and Guidance Plan) to further reduce temporary, indirect project impacts to the Joshua Tree National Park and related recreation activities.
APM-45	If residual impacts to Tier 1 and Tier 2 roads/primitive roads/trails, Backcountry Byways, or other significant linear features cannot be protected and maintained, commensurate compensation in the form of an enhanced recreation operations, recreation facilities or opportunities will be required.	APM-45 is supplemented by MMs SD-1 (Plan Review), SD-2 (Funding Agreement), and SD-3 (Signage and Guidance Plan) to further reduce temporary, indirect project impacts to the Joshua Tree National Park and related recreation activities.

Table 4.15-1. Applicant Proposed Measures for Special Designations

APM #	Text	Explanation
APM-47	**Required Visual Resource BMPs.** The Project will abide by the BMPs addressed in the most recent version of the document "Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands," or its replacement, including, but not limited to the following: ▪ Color treat all solar facilities Shadow Gray from the BLM Environmental Color Chart CC001 unless a more effective color is selected by the Field Office VRM specialist. ▪ Transmission: – Color treat monopoles Shadow Gray per the BLM Environmental Color Chart CC001 unless a more effective color choice is selected by the local Field Office VRM specialist. – Lattice towers and conductors will have non-specular qualities. – Lattice towers will be located a minimum of ¾ mile away from Key Observation Points such as roads, scenic overlooks, trails, campgrounds, navigable rivers, and other areas people tend to congregate and located against a landscape backdrop when topography allows. ▪ Night Sky – BMPs to minimize impacts to night sky including light shielding will be employed	APM-47 is supplemented by MM SD-2 (Funding Agreement) to further reduce temporary, indirect project impacts to the Joshua Tree National Park, especially due to nighttime lighting.
APM-48	If designated vehicle routes are directly impacted by activities (includes modification of existing route to accommodate industrial equipment, restricted access or full closure of designated route, pull outs, and staging areas to the public, etc.), mitigation will include the development of alternative routes to allow for continued vehicular access with proper signage, with a similar recreation experience. In addition, mitigation will also include the construction of an "OHV touring route" which circumvents the activity area and allows for interpretive signing materials to be placed at strategic locations along the new touring route, if determined to be appropriate by BLM.	APM-48 is supplemented by MMs SD-1 (Plan Review), SD-2 (Funding Agreement), and SD-3 (Signage and Guidance Plan) to further reduce temporary, indirect project impacts to the Joshua Tree National Park and related recreation activities.

Effects on special designations would be reduced by mitigation measures presented in several other analyses:

- MM AQ-SC-3, Construction Fugitive Dust Control (Previously PSPP MM AQ-SC-3)
- MM AQ-SC-4, Dust Plume Response Requirement (Previously PSPP MM AQ-SC-4)
- MM AQ-SC-7, Operation Dust Control Plan (Previously PSPP MM AQ-SC-7)
- MM CUL-14, Update Palen Dry Lake ACEC Management Plan
- MM CUL-15, Palen Pass Historic District Recording
- MM WIL-10, Sand Dune/Mojave Fringe-toed Lizard Mitigation (Previously PSPP MM BIO-20)

- MM VIS-1, Surface Treatment of Project Structures and Buildings (Previously PSPP MM VIS-1)
- MM VIS-2, Revegetation of Disturbed Soil Areas (Previously PSPP MM VIS-2)
- MM VIS-3, Temporary and Permanent Exterior Lighting (Previously PSPP MM VIS-3)
- MM VIS-4, Project Design (Previously PSPP MM VIS-4)
- MM BLM-VIS-2, Night Lighting (Previously BLM-VIS-2)

The Record of Decision or ROW grant stipulations for the Palen Solar Project may recognize an Interagency Agreement between the BLM and the National Park Service (NPS). If adopted, this agreement would establish roles and responsibilities and the agencies would work cooperatively to develop a mitigation monitoring system. As has been done for previous solar projects near Joshua Tree National Park, the NPS would significantly contribute to the development of detailed criteria in the lighting, dust control, and noise mitigation and monitoring for the Project.

SD-1 **Plan Review.** The NPS shall be afforded the opportunity to review and comment on the following pre-construction plans required for the Project prior to approval of the plans by the BLM: Weed Management Plan (VEG-9), Dust Control Plans (AQ-SC-3 and AQ-SC-7), and Construction Traffic Control Plan (TRA-1). Review and comment by the NPS must be within the timeframe specified by the BLM.

SD-2 **Funding Agreement.** The Applicant shall enter into a funding agreement or other financial mechanism, as may be specified in the ROD or ROW grant, to reimburse the NPS for reasonable costs incurred in the monitoring of the following measures to address temporary indirect impacts to the Joshua Tree National Park:

- *Fugitive dust:* AQ-SC-3 and AQ-SC-7, requiring the development and implementation of dust control plans during construction and operations, and WR-1H requiring the development and implementation of measures designed to prevent wind and water erosion including application of chemical dust palliatives after grading to limit water use.
- *Noise:* NOISE-6, limiting most construction activity to daytime hours.
- *Nighttime lighting:* VIS-3 requiring the design and installation of a lighting mitigation plan concerning temporary and permanent exterior lighting.

SD-3 **Signage and Guidance Plan.** A Signage and Guidance Plan shall be developed for Joshua Tree National Park by the Applicant and reviewed and approved by the NPS and BLM prior to the start of construction of the Project. The intent of this plan is to address the potential indirect effects on NPS land as a result of the influx of workers associated with mobilization, construction, and demobilization of the Project. The plan shall include the following elements:

- Design and installation of directional and informational signage that identify areas of Joshua Tree National Park available for day, overnight, and long-term stays, off-limit areas, and pertinent park rules and regulations;

- Design and installation of strategically placed gates, bollards, or the like, inside the boundary of Joshua Tree National Park, where deemed necessary, for the purpose of vehicular control on NPS parkland located nearest the project boundary;
- Educational instruction for project construction workers on park rules and regulations pertinent to Joshua Tree National Park and Joshua Tree Wilderness Areas. This instruction shall be integrated into the Worker Environmental Awareness Program;
- Requirements for the retention and/or removal of any items installed as part of the plan following completion of construction of the project; and,
- Funding mechanism for implementing the plan.

Items installed as part of the plan shall have a nexus to the NPS's need to address the likely impacts associated with above normal numbers of users of JTNP facilities during the mobilization, construction, and demobilization period of the Project.

4.15.5 Residual Effects after Implementation of Mitigation Measures

Implementation of proposed Mitigation Measures SD-1, SD-2, and SD-3, would incorporate the NPS into the mitigation efforts for the Proposed Action. Residual effects to the NPS would remain due to long-term effects such as those to visual resources.

4.15.6 Unavoidable Adverse Impacts

Unavoidable impacts to designated wilderness areas would result because construction and operation of the Proposed Action would alter the adjacent scenery to a more industrial setting, as viewed from within the wilderness. Unavoidable impacts to designated ACECs could result because construction and operation of the Project may have a permanent effect on biological resources or affect archeological, cultural, or historical artifacts present at ACECs.

4.15.7 CEQA Significance Thresholds and Determinations

Appendix G of the State CEQA Guidelines does not provide significance criteria for special designations, except those stated for agriculture and forestry resources (addressed under Section 4.6, Lands and Realty). No significance determination has been made.

4.16 Transportation and Public Access – Off Highway Vehicle Resources

4.16.1 Impact Assessment Methodology

The assessment of transportation and public access-related impacts from implementation of the Proposed Action considers existing designated open routes in the vicinity of the Project, surface transportation facilities in the project vicinity, and location of airport and flight paths near the site. A quantitative approach was taken to assess the impacts of the Project on traffic flow impacts based on the relative volume of current traffic on roads as compared to anticipated levels of project-related traffic presented in the Traffic Study, POD Appendix K. For an analysis of potential impacts to air transportation, this analysis focuses on potential hazard impacts to navigable airspace.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.16.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.16.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. APM-44, APM-45, and APM-48 are relevant to public access. The text of these APMs is also presented in Section 4.16.4.

4.16.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two action alternatives and the No Action Alternative.

Proposed Action: Direct Effects

Public Access

As presented in Section 2.2.7 (Applicant Proposed Measures Included in the Proposed Action), the Applicant has committed to three measures that could reduce potential significant impacts to off-highway routes.

OHV Routes. The project site currently contains approximately 9 miles of BLM-designated open routes that would be closed to off-highway vehicle (OHV) use during construction and operations. Elimination of these routes would impact the ability of OHVs to travel in and through the site, although in some cases, users could detour onto other routes to access some of the same locations. According to the BLM Rangers from the Palm Springs Field Office, OHV use in and around the site is minimal, with not more than a few hundred visits in a year during the cool months (September-May). In general, sightseeing and day use touring by locals is the predominant use pattern on the affected routes (versus OHV use).

- **Routes DC949, DC948, and DC952** run from the northwest to southeast through the Project. There are no existing alternate routes available and closure of these routes would affect motorized recreation touring between Desert Center and Blythe. Because Route DC952 is located just within the project fenceline so it would be closed to the public due to obstruction by Project fences. While APMs 44, 45, and 48 have the potential to reduce impacts, Mitigation Measure RC-1 (Prevent Blockage of Open Route DC952; see Section 4.12.4) recommends a specific requirement, the relocation of the project fenceline to avoid blockage of this route. The revised fenceline is illustrated in Figure 4.16-1 (Appendix A), showing that the revision would result in a change to the project footprint of less than 30 acres.
- **Route DC511** is the access road for SCE's existing 115 kV transmission line; it would be avoided by the Project and would remain open and unfenced.
- **Route DC950** runs from the I-10 Corn Springs Road exit, northeast, diagonally across the Project. After the first one-half mile, this route would be blocked by the Project, and alternative routes would be difficult to develop, because, as shown on Figure 3.16-1, there are private lands adjacent to the Project on the northwest, northeast, and southeast corners. However, similar access to the dunes is provided by DC951 to DC502. While APM-48 provides for installation of interpretive signs at strategic locations, Mitigation Measure RC-2 (see Section 4.12.4) is recommended to provide more specific direction on these compensatory actions. This measure would compensate for loss of DC950 by providing recreational signage along the remaining open routes.

Removal of these open routes would impact OHV and pedestrian recreation users who would access the site, or areas north and east of it, for hiking and camping from designated OHV routes. While access to surrounding BLM lands would remain available, closure of the segments of routes DC948, DC952, and DC950 that are within Project boundaries would make access more challenging. In addition, route DC-952 is a long route that parallels the freeway, and its closure in the Palen area would leave OHV users without a continuous non-freeway route on the north side of the freeway. Therefore, Mitigation Measures RC-1 (Prevent Blockage of Open Route DC952) and RC-2 (Provide Interpretive and Informational Signs) are recommended. As described above, while the APMs would also help reduce impacts to open routes.

After decommissioning of the Project, these OHV routes could again be open for public use.

Washes Open Zones. This project area is currently located in a Development Focus Area (DFA) designated by the DRECP LUPA. However, as the Proposed Action is not subject to the DRECP, the analysis considers the effects to the previous land use designation. Prior to the DRECP LUPA, the project area was previously designated as Moderate Multiple Use Class (MUC M) which allows OHV travel in open washes. Construction and operation of the Project would result in closure of the navigable Primary and Secondary washes that transverse the site to OHV users and recreationists. However, users could detour onto other routes in the area. The implementation of APMs would reduce potential impacts to affected OHV routes.

Traffic

Construction. The construction workforce would commute from the surrounding areas. Workers commuting from regional areas would most likely find temporary housing in Blythe or Indio or

both. Workers from Palm Springs, the Los Angeles basin, and the Indio area would travel east on I-10 to the project site, while workers from Blythe and the Arizona communities of Quartzsite, Ehrenberg, and Cibola would follow I-10 west to the project site.

The worst-case scenario for the Project, where all workers arrive during peak hours and commute in their individual vehicles during the peak construction period, the Project is estimated to generate average daily trip volumes of 1,151 inbound trips during the morning peak period (7:00-9:00 a.m.) and another 1,151 outbound trips during the evening peak hour (4:00-6:00 p.m.). This results in a total of 2,370 one-way trips during the peak construction period. During an average (non-peak) construction period, the Project would generate less daily trips.

For impacts to the local transportation system, the following analysis evaluates potential impacts of the worst-case traffic volumes on baseline level of service (LOS) determinations, which is a generally accepted measure used by traffic engineers, planners, and decision-makers to describe and quantify the congestion level on a particular roadway or intersection in terms of speed, travel time, and delay. LOS grades range from LOS A, free-flow, to LOS F, poor progression.

Table 4.16-1 compares LOS on all study roadways with and without the project-generated worst-case peak hour construction traffic volumes. Table 4.16-2 compares peak hour delay and LOS on all study intersections with and without project-generated peak hour construction trips. The analysis shown in Tables 4.16-1 and 4.16-2 uses worst-case (peak construction) trips; average construction periods would result in reduced effects to the transportation network.

Table 4.16-1. Roadway Segment: Construction Trip Analysis

	Without Project		With Project	
Roadway Segment	ADT	LOS	ADT	LOS
I-10: SR-177 to Corn Springs Road	3,028	B	3,602	B
I-10: Corn Springs Road to Chuckwalla	3,028	B	3,602	B
Corn Springs Road	Negligible	A	1,151	C

Source: LSA, 2016

Table 4.16-2. Intersection: Construction Trip Analysis

	Without Project				With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
Roadway Segment	Delay[1]	LOS	Delay	LOS	Delay	LOS	Delay	LOS
I-10 Eastbound at Corn Springs	8.5	A	8.5	A	14.5	B	8.6	A
I-10 Westbound at Corn Springs	7.2	A	7.2	A	173.2	F	14.5	B

1 - Average delay (seconds per vehicle)
Source: LSA, 2016

As shown in Table 4.16-1, the addition of worst-case (peak construction) trips on the local roadway segments analyzed does not adversely diminish LOS over existing conditions. However, as shown in Table 4.16-2, peak construction traffic volumes would adversely affect the I-10 westbound ramp at Corn Springs Road. With the addition of peak construction traffic volumes, the I-10 westbound

ramp at Corn Springs Road would temporarily diminish from operating at LOS A to operating at LOS F during the morning peak period. With the exception of this intersection during the morning peak period, as shown in Table 4.16-2, the addition of worst-case (peak construction) trips on the local intersections analyzed would not adversely diminish LOS over existing conditions.

To ensure adverse effects from increased traffic volumes during construction are minimized, Mitigation Measure TRA-1 is proposed to require development and approval of a Construction Traffic Control Plan. The purpose of this plan would be to reduce potential impacts to the circulation system from the temporary increase of passenger and truck trips during construction.

Operation. Operation of the Project would require a labor force of about 7-12 employees to staff the facility 24 hours a day, 7 days a week. This translates to approximately 24 daily one-way trips for employees, assuming workers travel in their own individual vehicles. To evaluate a worst-case scenario, this analysis assumes all personnel would arrive and depart within the peak hours. The operations workforce would be likely to use the same routes to access the Project as would the construction crews. Operation of the Project would also generate minor truck traffic during activities such as supply delivery and off-site waste shipments. Project operation is anticipated to generate up to 12 daily one-way truck trips.

Tables 4.16-3 and 4.16-4 compare LOS on all study roadways and intersections with and without the project-generated operational traffic volumes.

Table 4.16-3. Roadway Segment: Operational Trip Analysis

	Without Project		With Project	
Roadway Segment	ADT	LOS	ADT	LOS
I-10: SR-177 to Corn Springs Road	3,028	B	3,064	B
I-10: Corn Springs Road to Chuckwalla	3,028	B	3,064	B
Corn Springs Road	Negligible	A	125	A

Source: LSA, 2016

Table 4.16-4. Intersection: Operational Trip Analysis

	Without Project				With Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
Roadway Segment	Delay[1]	LOS	Delay	LOS	Delay	LOS	Delay	LOS
I-10 Eastbound at Corn Springs	8.5	A	8.5	A	8.6	A	7.2	A
I-10 Westbound at Corn Springs	7.2	A	7.2	A	8.4	A	7.3	A

1 - Average delay (seconds per vehicle)
Source: LSA, 2016

As shown in Tables 4.16-3 and 4.16-4, during project operation, all study roadway segments and intersections would continue to operate at the same LOS experienced currently. Therefore, project operation would be no adverse effect to LOS.

Roadway Safety

In addition, several pieces of equipment that exceed roadway load or size limits would need to be transported to the site via I-10 during construction. This equipment includes the steam turbine generator and main transformers. The equipment would be transported using multi-axle trucks. To transport this equipment, the Applicant must obtain special ministerial permits from Caltrans to move oversized or overweight materials. In addition, the Applicant must ensure proper routes are followed; proper time is scheduled for the delivery; and proper escorts, including advanced warning and trailing vehicles as well as law enforcement control are available, if necessary. These roadways could be damaged due to project-related construction activities. Oversized or overweight trucks with unlicensed drivers could be hazardous to the general public and/or damage roadways. If oversized or overweight trucks were to use County roadways and the pavement structure were not sufficient to support these loads, the Project could result in damage to the County roadways. Use of County roadways could also result in damage to County public roads, easements, and rights-of-way which would impact other roadway users. To reduce any effects to roadway safety, Mitigation Measure TRA-1 (Construction Traffic Control Plan) is proposed and would require pavement testing and any necessary improvements as well as restoration of any roadways post construction. This Plan would be reviewed and approved by Caltrans and the County of Riverside

Heavy equipment that would be used to construct a new transmission line from the Project to a new substation includes cranes, cement mixers and drilling equipment. Transmission line construction workers and delivery vehicles would be dispersed along the transmission line route. Regardless of the substation location, the transmission line would exit the northwest corner of the Project and travel west and south through BLM lands, crossing I-10 and traveling south into the substation.

To reduce potential adverse impacts of construction activities increasing hazards to the traffic circulation system, Mitigation Measure TRA-1 (Construction Traffic Control Plan) is proposed and would require review and approval of a Construction Traffic Control Plan by Caltrans and the County of Riverside. While there may be a limited increase in hazards due to construction activities proximate to public roadways, construction would be temporary and incorporation of Mitigation Measure TRA-1 would reduce the effects.

Once operational, while most solar PV panels are designed to minimize glare, some localized glare could occur. The nearest solar panels of the array would be located approximately 1,200 feet north of I-10. Solar PV modules would be ground mounted and tilted upward. At this distance, glare would generally be minor; however, if the panels were glass covered, they could result in glare that would impact motorist safety. Mitigation Measure TRA-2, Panel Glare Reduction, would reduce this effect.

Aviation Safety

The project site was compared to the military flight paths and airspace designations of the California Military Land Use Compatibility Analysis (CMLUCA) database to determine whether the project site is located within military special-use airspace or is located beneath a military designated low-level flight path (CMLUCA, 2016). Based on the CMLUCA, the project site is located within special-use military airspace or an area designated for low-level military flight paths

and notification of the Project is required (CMLUCA, 2016). Mitigation Measure TRA-3 is proposed to ensure the military is notified of the Project.

The closest airfield to the project site is the privately operated Desert Center Airport, located at the end of an unnamed road approximately 5 miles northwest of the project site. The runway at this airport is oriented southwest-northeast. Due to this orientation in relation to the project site, air traffic approaching this runway are not expected to have solar panels facing them (as they would face south). While some localized glare could occur should low-flying aircraft travel close to the proposed array, glare is not expected to significantly affect airspace safety or operations of Desert Center Airport. As discussed in Section 3.11 (Public Health and Safety), according to the FAA Technical Guidance for Evaluating Selected Solar Technologies on Airports, it is the responsibility of local governments, solar developers, and other stakeholders in the vicinity of an airport to check with the airport sponsor and the FAA to ensure there are no potential safety or navigational problems with a proposed solar facility, especially if it is a large facility (FAA, 2010). Mitigation Measure TRA-3 is proposed to ensure the FAA is notified of the Project.

Proposed Action: Indirect Effects

The Proposed Action would have no indirect effects on public access or transportation facilities. However, because implementation of the Project would result in the removal of open OHV routes within the site, this could result in minor increases to recreation usership at other routes and open areas in the project area.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would be constructed within the same project boundary as the Proposed Action but would eliminate project development on the central desert wash that crosses the site from southwest to northeast. It would remain a 500 MW project. While the two panel areas would be fenced separately, Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures in Section 4.17) would require installation of a non-barbed wire traditional four-wire ranch fence across the wash area, if necessary to control recreational travel through the wash area after construction. Therefore, it is likely that the entire site would be fenced off so no public access would be available during both construction and operation. As a result, public access of the site under Alternative 1 would be the same as with the Proposed Action.

Alternative 1 would also result in the loss of public access and OHV use on the open routes across and within the site. The blockage of open routes would be the same as with the Proposed Action, with routes DC948, DC950, and DC952 blocked by the alternatives fenceline. The removal of open routes could impact OHV and pedestrian recreation users, making access to surrounding BLM lands much more challenging. As a result, Mitigation Measures RC-1 (Prevent Blockage of Open Route DC952) and RC-2 (Provide Interpretive and Informational Signs) are recommended for the Reduced Footprint Alternative.

Alternative 1 would have identical impacts to the circulation network as the Proposed Action. Eliminating development on the central desert wash would result in no difference to trip generation during construction and operation. Alternative 1 would result in identical construction-related trips and activities as the Proposed Action, also requiring the implementation of Mitigation Measure TRA-1 to reduce adverse impacts to the circulation system.

Alternative 1 would have no change to potential aviation impacts when compared to the Proposed Action. Alternative 1 has the identical potential to result in glare hazards to traffic and aircraft compared to the Proposed Action. Therefore, Alternative 1 would also require the implementation of Mitigation Measure TRA-2 and TRA-3 to reduce adverse impacts to traffic and navigable airspace.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would be constructed within the same project boundary as the Proposed Action but would eliminate the desert dry wash woodland with a 200-foot buffer and areas within the Mojave fringe-toed lizard suitable habitat from development. With these areas removed from the site, Alternative 2 is estimated to include a 200 MW project (due to the smaller project site available). Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures in Section 4.17) would require installation of a non-barbed wire traditional four-wire ranch fence across the wash area, if necessary to control recreational travel through the wash area post-construction.

The Avoidance Alternative would also include adherence to CMA LUPA-CTTM-2 that would require avoidance of activities that would have a significant adverse impact on use and enjoyment within 0.5 miles from centerline of Tier 2 Roads/Primitive Roads, and 300 feet from centerline of Tier 3 primitive roads/trails. If avoidance of Tier 2 and 3 roads, primitive roads and trails is not practicable, relocate access to the same or higher standard and maintain the setting characteristics and access to recreation activities, facilities, and destinations. The project site is crossed only by Tier 3 roads.

If implementation of the CMA does not allow adequate access, Mitigation Measures RC-1 (Prevent Blockage of Open Route DC952) and RC-2 (Provide Interpretive and Informational Signs) are recommended for the Reduced Footprint Alternative. Similar to the Reduced Acreage Alternative, there is currently no designated route that follows the large space between the two panel blocks. While the designated routes would be less affected by the Avoidance Alternative, the same routes would be blocked to some extent.

Public access of the site under Alternative 2 would be similar to that under the Proposed Action although the open routes in the area that would not be developed would still be open to the public. Alternative 2 would also result in the loss of public access and OHV use within the site. Because the overall size of site be reduced, the total amount of area restricted from public access would be slightly reduced. While the removal of open routes could impact OHV and pedestrian recreation users, access to surrounding BLM lands would be available. The implementation of APMs would reduce potential impacts to affected OHV routes. However, public access impacts would be slightly reduced under Alternative 2 compared to the Project.

Alternative 2 would have less impacts to the circulation network compared to the Proposed Action. Reducing the Project to a 200 MW facility is expected to incrementally reduce daily trip volumes by half. Therefore, Alternative 2 would reduce (and could eliminate) the adverse impact at the I-10 westbound ramp at Corn Springs Road during the morning peak period. While traffic volumes and potential impacts would be reduced, large truck trips and overall traffic on the rural project area roadways and intersections would still require the implementation of Mitigation Measure TRA-1 to reduce potentially adverse impacts to the circulation system.

Alternative 2 would slightly reduce potential aviation impacts when compared to the Proposed Action. Because the proposed solar facility would be reduced from 500 MW to 200 MW, the overall array would be smaller, reducing the overall potential to result in glare hazards to traffic and aircraft compared to the Proposed Action. However, because a large solar facility would still be constructed that could cause glare, Alternative 2 would also require the implementation of Mitigation Measure TRA-2 and TRA-3 to reduce adverse impacts to traffic and navigable airspace.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a DFA of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. Defining the type of project that may be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.16.3 Cumulative Effects

Geographic Scope

The geographic area of the cumulative analysis for the transportation analysis is the area defined by I-10 between Chiriaco Summit to the west and the City of Blythe to the east. This geographic area includes the portion of I-10 travelling through the community of Desert Center and the City of Blythe. Also included are local roadways connecting to I-10 within these communities, unincorporated areas of Riverside County, and some BLM-managed lands along this segment of I-10. This geographic area was selected because development projects and infrastructure improvement projects within this area could have an impact on traffic volumes and physical conditions on the study area roadways and other transportation facilities. While major projects outside this defined geographic area could potentially have an effect on study area traffic volumes, the impacts would be minor and have been considered in the ambient/regional growth rate that was applied to the existing traffic volumes.

The geographic area of the cumulative analysis for the public access analysis is a 10-mile radius of the project site. This geographic area includes the portion of OHV routes that transverse the site and any connectivity to adjacent lands. Furthermore, this area includes adjacent OHV routes and other navigable trails and areas that OHV users and recreationists may use to bypass the project site.

The following current and reasonably foreseeable projects, including other proposed or approved projects in the geographic areas described above, could affect transportation and public access cumulatively:

- Desert Southwest Transmission Line
- DC 50 Solar
- SunEdison Jupiter Project (CACA 56477)
- First Solar Development, LLC (CACA 56782)
- SunPower Project

- Plot Plan No. 23577, Revised Permit No 2
- Genesis Solar Energy Project
- SCE Red Bluff Substation
- Devers–Palo Verde No. 1 Transmission Line
- Devers–Palo Verde No. 2 Transmission Line
- Blythe Energy Project Transmission Line

Most of these projects have either undergone independent environmental review pursuant to NEPA and/or CEQA or will do so prior to approval. Even if environmental review has not been completed for the projects, their effects are considered in the cumulative impacts analyses in this EIS/EIR, as appropriate.

Current cumulative conditions relative to transportation and public access are expected to change as a result of the reasonably foreseeable future projects because the projects and growing population would result in increases in traffic volumes on the study area roadways and an increase in travel demand for all modes of transportation. In addition, some of the projects would result in temporary physical blockages or disruptions to the transportation facilities during project construction. Removal of open routes due to the development of the cumulative projects would affect OHV and other recreation users.

Cumulative Impact Analysis

Public Access

Any renewable energy project or other action identified that precludes or prevents access (temporarily or permanently) to an open route could cause or contribute to adverse effects on OHV and recreational use, including rerouting, use restrictions, and closures. Because renewable energy and transmission development would not generally be intended to provide public access, individual projects (including those developed within DRECP DFAs) would likely preclude public access through the site by installing perimeter fencing. Closure of large sites would decrease the availability of BLM and other public routes of travel and impede OHV and trail use to or from off-site locations. The projects could also disrupt the accessibility of lands along local roads and preclude access to lands surrounding the project sites.

The primary projects that would cumulative impact the routes impacted by the project are DC 50 Solar, SunEdison Jupiter Project (CACA 56477), First Solar Development, LLC (CACA 56782), SunPower Project. All projects are located on public lands other than the DC 50 project and would be subject to the DRECP which would require CMAs to provide alternate replacement routes to ensure continued access to previously accessible public lands.

Construction Traffic

Cumulative traffic impacts would occur on the roadways and other transportation facilities that would be affected by the Proposed Action and cumulative projects if construction activities were to be implemented simultaneously. The projects that could have a cumulative impact on traffic conditions during construction of the Proposed Action include those that have not yet been constructed: Desert Southwest Transmission Line, DC 50 Solar, SunEdison Jupiter Project (CACA

56477), First Solar Development, LLC (CACA 56782), SunPower Project, and Plot Plan No. 23577, Revised Permit No 2.

In particular, EDF's 150 MW Desert Harvest Project (located about 8 miles northwest of the PSP) may be under construction at the same time as the Palen Solar Project, due to the potential for them to be linked through a single power purchase agreement. Construction traffic from that project would be focused at the Hwy 177 exit from I-10, whereas the PSP traffic would exit the I-10 about 10 miles east, at Corn Springs Road.

The cumulative traffic impacts could be substantial if simultaneous construction activities resulted in significant trip volumes, temporary roadway or lane closures, or other transportation disruptions that affected a roadway to a greater extent than would the Project alone. For example, if construction of the Project requires truck trip volumes along a travel lane that would also be used or temporary disrupted by a foreseeable project, the cumulative impacts could be adverse, unless the construction activities and traffic management plans were coordinated and compatible. The cumulative traffic impacts could be mitigated by implementing Mitigation Measure TRA-1 (Construction Traffic Control Plan), as discussed in Section 4.16.

Operation and Maintenance Traffic

Project operation and maintenance is estimated to generate a total of about 36 one-way trips. While the facility would operate seven days a week, employee work shifts would be staggered during each day. Other solar energy facilities proposed in the area, including future projects potentially build within DRECP DFAs, would likely produce long-term operation and maintenance daily trips; however, like the Project, operational traffic would be minimal. When considering recent ADT volumes of I-10 near the project area, cumulative development of the area is unlikely to result in a significant number of new trips over time compared to existing ADT volumes. As presented in Section 3.16, the affected portion of I-10 currently operates at LOS B so the cumulative addition of traffic trips is not expected to result in overall adverse cumulative impacts (LOS E or below) due to the traffic generated during the operation and maintenance phase of the Project in addition to long-term trips generated by the cumulative projects.

Roadway Safety

Development of existing and foreseeable projects (including renewable energy projects and transmission permitted under the CDCA Plan, as amended by the DRECP) would require use of slow-moving heavy-duty trucks during construction and could increase the potential for unsafe movement of vehicles. In the event construction phases of the projects overlap with construction of the Proposed Action, a cumulative impact on increased hazards and the risk for a traffic incident could occur. The cumulative traffic impacts could be mitigated by implementing Mitigation Measure TRA-1 (Construction Traffic Control Plan), as discussed in Section 4.16. Development of the DC 50 Solar Project, SunEdison Jupiter Project, and First Solar Development, LLC could result in a cumulative impact due to reflective glare on traffic, most notable because the projects could all be adjacent to each other and close to the Proposed Action and because the projects have not stated which technology they would use some PV technologies produce more glare than others. Implementing Mitigation Measure TRA-2 (Panel Glare Reduction Measures) would reduce the contribution of the Project to the cumulative effect.

Aviation Safety

Each foreseeable project identified (including future projects developed within DRECP DFAs) would be subject to review under FAA 7460 (Notice of Proposed Construction or Alteration – Obstruction Evaluation and Airport Airspace Analysis), as required, and solar energy projects would be subject to the FAA Technical Guidance for Evaluating Selected Solar Technologies on Airports. Adherence to these requirements ensure the FAA determines there are no potential safety or navigational problems with a proposed project, or determines mitigation to ensure no impacts to navigable airspace occur. Therefore, the FAA would review projects independently and cumulative, ensuring no adverse cumulative impact to airspace safety would occur.

4.16.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are 3 APMs relevant to transportation and public access (Section 2.2.7, Chapter 2). Table 4.16-5 explains how these measures reduce project effects, and how they relate to mitigation measures recommended below.

Table 4.16-5. Applicant Proposed Measures for Transportation and Public Access

APM #	Text	Explanation
APM-44	Avoid Tier 1, Tier 2, Tier 3 roads/primitive roads/trails, Backcountry Byways, and other significant linear features. If avoidance is not practicable, relocate access to the same or higher standard and maintain the recreation setting characteristics and access to recreation activities, facilities, and destination.	Mitigation Measures RC-1 (Prevent Blockage of Open Route DC952) and RC-2 (Provide Interpretive and Informational Signs) are recommended to provide specific protection or compensation for OHV use of open routes.
APM-45	If residual impacts to Tier 1 and Tier 2 roads/primitive roads/trails, Backcountry Byways, or other significant linear features cannot be protected and maintained, commensurate compensation in the form of an enhanced recreation operations, recreation facilities or opportunities will be required.	
APM-48	For the designated vehicle routes directly impacted by activities (includes modification of existing route to accommodate industrial equipment, restricted access or full closure of designated route, pull outs, and staging areas to the public, etc.), mitigation will include the development of alternative routes to allow for continued vehicular access with proper signage, with a similar recreation experience. In addition, mitigation will also include the construction of an "OHV touring route" which circumvents the activity area and allows for interpretive signing materials to be placed at strategic locations along the new touring route, if determined to be appropriate by BLM.	

Because this document is supplemental to the EIS/Staff Assessment for PSPP, the mitigation measures identified for PSPP have been retained where applicable with revisions to account for differences between the Proposed Action and PSPP and reflect the roles of the lead agencies. The following PSPP mitigation measures have been eliminated:

- TRANS-1, Regulation Compliance, has been eliminated because it is required due to the existing regulation.

- TRANS-2, Transport of Hazardous Materials, has been eliminated because the permits and/or licenses noted in the mitigation are required by law.
- TRANS-3, Road Damage Repair, has been incorporated into Mitigation Measure TRA-1.
- TRANS-5, Encroachment Permits, has been eliminated because encroachment permits are required by law.

Based on the analysis provided within this section, the following mitigation measures are recommended to reduce potential impacts to surface and airspace transportation.

TRA-1 **Construction Traffic Control Plan.** (Previously PSPP MM TRANS-4) Prior to the start of construction, the Applicant shall prepare and submit a Construction Traffic Control Plan for review and/or approval to Caltrans, the BLM, and the County of Riverside for I-10, Corn Springs Road, and any other public roadway affected by construction of the necessary transmission tie-in. The Construction Traffic Control Plan shall include, but not be limited to:

- Methods to reduce project-generated trips during peak travel hours (8:00-10:00 a.m. and 4:00-6:00 p.m.) to the maximum extent feasible.
- Methods to ensure site ingress/egress has minimum disruption to local roadways and motorists.
- A work schedule and end-of-shift departure plan designed to ensure that stacking does not occur at intersections necessary to enter and exit the project sites. The project owner shall consider using one or more of the following measures designed to prevent stacking: staggered work shifts, off-peak work schedules, and/or restricting travel to and departures from each project site to 10 or fewer vehicles every three minutes during peak travel hours on I-10.
- Provisions for an incentive program, such as employer-sponsored commuter checks, to encourage construction workers to carpool and/or use van or bus service.
- The locations and durations of any temporary lane closures or disruptions.
- The locations and use of flaggers, warning signs, lights, barricades, delineators, cones, arrow boards, etc., according to standard guidelines outlined in the Manual on Uniform Traffic Control Devices, the Standard Specifications for Public Works Construction, and/or the California Joint Utility Traffic Control Manual.
- Defining methods to obtain and adhere to encroachment or oversize vehicle permits (as needed) throughout construction to minimize impacts to circulation.
- Plans for making any necessary improvements to ensure County roadways provide sufficient load-bearing capacity for construction and operation traffic based on pavement testing for all County roads that could be used by construction and operation activities. Improvements must meet the minimum Riverside County or Caltrans standard (whichever is applicable) for a roadway that accommodates heavy trucks.

- Methods and agreements to ensure any damage to local roadways demonstrable to project activities is repaired and restored to pre-project or better conditions in coordination with Caltrans and/or Riverside County. Repair and restoration of access roads may be required at any time during the construction phase of the Project to assure public safety.

TRA-2 **Panel Glare Reduction:** (Previously PSPP MM TRANS-6) To respond to concerns about potentially hazardous glare from the Project that may affect roadway or aviation safety, the project owner shall establish a toll-free number for the public to report complaints related to glare from solar panels, and shall post such number in prominent locations. If the project owner receives a complaint regarding glare from panels, it shall investigate to determine whether the complaint is legitimate and if the Project is the source of the glare. If it is determined that the Project is the source of glare and it is causing human health or safety hazards, the project owner shall take all feasible measures to reduce the glare. Such measures may include localized screening.

The project owner shall notify the BLM AO and Riverside County within 3 days of receiving a glare complaint. As soon as the complaint has been resolved the project owner shall submit to the BLM AO and Riverside County a report in which the complaint as well as the actions taken to resolve the complaint are documented. The report shall include (a) a complaint summary, including the name and address of the complainant; and (b) a discussion of the steps taken to investigate the complaint, the reasons supporting a determination of whether or not the complaint is legitimate, and the steps taken to address the complaint and the final results of these efforts. In the monthly compliance report, the project owner shall describe any complaints it received that month that it determined not to be legitimate and shall explain the basis of its determination.

TRA-3 **FAA and Military Notification.** During the public review process of this EIS/EIR, or at a minimum prior to project approval, the lead agencies and Applicant shall notify the FAA and military facility nearest the site of the Project, providing a detailed project description. Any recommendations provided by the FAA and/or military to reduce potential impacts to air navigation should be incorporated into the Project to the maximum extent feasible.

In addition, Mitigation Measures RC-1 (Prevent Blockage of Open Route CD952; see Section 4.12) and RC-2 (Provide Interpretive and Informational Signs) would supplement the requirements of APMs 44, 45, and 48, which provide for avoidance or relocation of roads and trails, and compensation in the form of enhanced recreational facilities or interpretive signs.

Mitigation Measure RC-1 (see Section 4.12.4) is recommended to prevent the blockage of Route DC952, which runs from the northwest to southeast through the Project. There are no existing alternate routes available and closure of these routes would affect motorized recreation touring between Desert Center and Blythe. Because portions of Route DC952 are located just within the proposed project fenceline, it would be closed to the public due to obstruction by Project fences. Mitigation Measure RC-1 recommends the relocation of the project fenceline to avoid blockage of this route. This relocation would result in a reduction of the area within the fenceline of less than

30 acres. Mitigation Measure RC-2 is recommended to compensate for loss of DC950 by providing OHV route signage along the remaining open routes.

4.16.5 Residual Effects after Implementation of Mitigation Measures

With the implementation of proposed Mitigation Measures RC-1, RC-2, TRA-1, TRA-2, and TRA-3, the Proposed Action would have no residual impacts to public access, the circulation system, or navigable airspace.

4.16.6 Unavoidable Adverse Impacts

With the implementation of proposed Mitigation Measures RC-1, RC-2, TRA-1, TRA-2, and TRA-3, the Proposed Action would have no unavoidable adverse impacts to the public access, the circulation system, or navigable airspace.

4.16.7 CEQA Significance Thresholds and Determinations

In accordance with Appendix G to the State CEQA Guidelines, traffic impacts would be considered significant if the Proposed Action would:

T-1 Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit;

T-2 Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

T-3 Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks;

T-4 Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);

T-5 Result in inadequate emergency access; or

T-6 Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

T-1 Performance of the Circulation System

While maximum daily construction trips associated with the Proposed Action, Reduced Footprint Alternative, or Avoidance Alternative would not cause a substantial increase in traffic in relation to the existing traffic load and capacity of the street system (refer to Tables 4.16-1 and 4.16-2), Mitigation Measure TRA-1 (Construction Traffic Control Plan) is proposed to minimize trips during the morning and afternoon peak periods. With the implementation of this measure, project construction traffic would result in a less than significant impact.

Maximum operational traffic volumes from project operation would result in less than significant impacts with respect to causing a substantial increase in traffic in relation to the existing traffic load and capacity of the street system.

Depending on the construction schedule, the smaller configuration of the Avoidance Alternative (200 MW project), may result in fewer daily construction trips and less operational traffic. Therefore, the impacts of this alternative may be less than that of the Proposed Action or Reduced Footprint Alternative.

The No Action Alternative would not have any impacts related to Impact T-1 since under this alternative, the Proposed Action would not be constructed.

T-2 Level of Service Standards and Travel Demand Measures

As shown in Tables 4.16-3 and 4.16-4, the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative would not generate long-term operational trip volumes that would reduce the capacity or performance standards of I-10, which is part of Riverside County Transportation Commission's Congestion Management Program. Less than significant impacts would occur.

The No Action Alternative would not have any impacts related to Impact T-2 since under this alternative, the Proposed Action would not be constructed.

Since no significant impacts have been defined for Impact T-2, no mitigation measures are required.

T-3 Change Air Traffic Patterns

Based on the CMLUCA, the project site for the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative is located within special-use military airspace or an area designated for low-level military flight paths and notification of the Project or action alternatives is required. It is the responsibility of local governments, solar developers, and other stakeholders in the vicinity of an airport to check with the airport sponsor and the FAA to ensure there are no potential safety or navigational problems with a proposed solar facility, especially if it is a large facility.

Mitigation Measure TRA-3 (FAA and Military Notification) is proposed to ensure the military and FAA are notified of the Project or action alternatives. With the implementation of this measure, the Project would result in less than significant impacts to aviation safety.

The No Action Alternative would not have any impacts related to Impact T-3 since under this alternative, the Proposed Action would not be constructed.

T-4 Increase Roadway Hazards

Construction of the Project, Reduced Footprint Alternative, or Avoidance Alternative would introduce large vehicle ingress/egress, potential disruptions to travel lanes, and potential roadway damage that could increase hazards to motorists. Additionally, depending on the type of PV panels used, the Project or action alternatives could result in increased reflective glare to motorists along the I-10.

To reduce potential adverse impacts of construction activities increasing hazards to the circulation system, Mitigation Measure TRA-1 (Construction Traffic Control Plan) is proposed and would require review and approval of a Construction Traffic Control Plan by Caltrans, the BLM, and the County of Riverside. Mitigation Measure TRA-2 (Panel Glare Reduction) would require the Applicant to include a toll-free line for complaints and would address any complaint that is recorded. With the implementation of these measures, the Proposed Action or action alternatives would result in less than significant impacts to motorist safety.

The No Action Alternative would not have any impacts related to Impact T-4 since under this alternative, the Proposed Action would not be constructed.

T-5 Inadequate Emergency Access

Construction of gen-tie infrastructure and oversize vehicle trips associated with material delivery for the construction of the Project, Reduced Footprint Alternative, or Avoidance Alternative may require temporary lane disruptions that could restrict or impede vehicle flow.

To reduce potential adverse impacts of construction activities affecting traffic circulation, Mitigation Measure TRA-1 (Construction Traffic Control Plan) is proposed and would require review and approval of a Construction Traffic Control Plan by Caltrans and the County of Riverside. With the implementation of this measure, the Proposed Action or action alternatives would result in less than significant impacts to emergency vehicle access and movements.

The No Action Alternative would not have any impacts related to Impact T-5 since under this alternative, the Proposed Action would not be constructed.

T-6 Public Transit, Bicycle, or Pedestrian Facilities

Construction and operational traffic and activities from the Project, Reduced Footprint Alternative, or Avoidance Alternative would not conflict with any designated bike, public transit, or pedestrian lanes or facilities. Therefore, no impacts would occur. Similarly, no impact would occur as a result of the No Action Alternative since under this alternative, the Proposed Action would not be constructed.

Since no impacts have been defined for Impact T-6, no mitigation measures are required.

Cumulative Impacts

Degrade the Performance of the Local Road Network or Increase Motorist Hazards

Cumulative traffic impacts could be mitigated by implementing Mitigation Measure TRA-1 (Construction Traffic Control Plan). With the implementation of this mitigation, the impact from the Project or action alternatives, combined with impacts of related cumulative projects within the geographic extent area, would be less than significant.

With respect to motorist safety, a number of renewable projects along the I-10 could result in reflective glare that could cumulatively affect motorists' vision and safety for a long stretch from Desert Center to the site of the Project and action alternatives. Mitigation Measure TRA-2 (Panel

Glare Reduction) would require the Applicant to take any reflective glare complaints and resolve them. This mitigation measure would reduce the contribution of the Project or action alternatives to less than cumulatively significant.

With respect to aviation safety, the FAA reviews all projects independently (as required), ensuring that no cumulative impacts to airspace safety would occur. Therefore, the impact of the Project or action alternatives, combined with impacts of related cumulative projects, would be less than significant.

The primary projects that would cumulative impact the routes impacted by the Project or action alternatives are DC 50 Solar, SunEdison Jupiter Project (CACA 56477), First Solar Development, LLC (CACA 56782), and SunPower Project. All projects are located on public lands other than the DC 50 project and would be subject to the DRECP, which would require CMAs to provide alternate replacement routes to ensure continued access to previously accessible public lands. As such, there would be a less than significant cumulative impact.

4.17 Vegetation Resources

4.17.1 Impact Assessment Methodology

This section analyzes potential impacts to vegetation resources from the construction, operation, and decommissioning of the Proposed Action and alternatives. This analysis identifies and analyzes potential direct, indirect and cumulative impacts of the Proposed Action and alternatives to special status plant species, sensitive natural communities, and other significant vegetation resources, and recommends mitigation measures where appropriate to address such impacts. Direct, indirect, and cumulative impacts are quantified where data permits.

This analysis is based primarily on new information provided in the Biological Resources Technical Report for the Palen Solar Project (Ironwood, 2017). Information supporting the impact analysis in this section also relies on the following sources: the PSPP PA/FEIS (BLM, 2011), PSPP Revised Staff Assessment (CEC, 2010), PSEGS DSEIS (BLM, 2013), and PSEGS Staff Assessment (CEC, 2013); as well as information contained within the BLM's Northern and Eastern Colorado Desert Coordinated Management Plan (NECO; BLM CDD, 2002), March 2008 Handbook H-1740-2, Integrated Vegetation Management Handbook (BLM, 2008), and the Desert Renewable Energy Conservation Plan Final EIS (DRECP; BLM, 2015).

This evaluation of potential impacts on vegetation resources is based on the resources identified on and around the project site, described in Section 3.17, as the Biological Resources Study Area. This analysis identifies potential impacts to vegetation resources within and adjacent to the project disturbance area, including the solar facility and gen-tie route; and to these resources within or adjacent to each of the alternative project areas.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.17.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.17.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. Biological Resources APMs relevant to vegetation resources are APMs 1 through 5, 7, and 8. Additional APMs that may be relevant to vegetation resources are 24, 29, 30, 37, 41, and 43.

4.17.2 Direct and Indirect Effects

Direct impacts are the direct or immediate effects of the Project on vegetation resources. Examples of direct impacts include destruction of special-status plants and loss or degradation of native vegetation and habitat. Indirect impacts are those effects that are caused by or will result from the Project, later in time or farther removed in distance, but are still reasonably certain to occur. Examples of indirect effects to native habitat and vegetation include erosion, sedimentation, and introduction of invasive species that may compete with native species and cause habitat degradation.

Some of the Project's impacts to vegetation can be quantified in terms of acreage (e.g., acreage of vegetation or habitat that would be affected by the Project). Other impacts (e.g., adverse effects

of dust to plants and vegetation) cannot be directly quantified, but acreage is often the best available estimator of expected disturbance for comparison purposes. Wherever feasible, the analysis indicates acreage as the best available metric for each anticipated impact.

Impact analyses typically characterize effects to plant communities as permanent or temporary, with temporary impacts referring to areas temporarily disturbed during project construction (e.g., laydown areas or cut/fill slopes) and permanent impacts referring to areas that are paved or otherwise modified for project purposes throughout the life of the Project. In desert ecosystems, the definition of "permanent" and "temporary" vegetation impacts must reflect the slow recovery rates of plant communities. Natural recovery rates from disturbance in these systems depend on the nature and severity of the impact. For example, creosote bushes can resprout a full canopy within five years after damage from heavy vehicle traffic (Gibson et al., 2004), but more severe damage involving vegetation removal and soil disturbance can take from 50 to 300 years for partial recovery; complete ecosystem recovery may require much longer (Lovich and Bainbridge, 1999). Consequently, due to the slow recovery rates of plant communities in desert ecosystems, impacts of the Proposed Action and alternatives are considered permanent.

Each potential impact to vegetation is described below, indicating whether it is a direct or indirect impact; whether its effects would be permanent, long-term or short-term; and whether it would occur during the construction or O&M phase. Impacts specific to the decommissioning phase are addressed separately. Acreages of each affected vegetation and habitat type, as well as sand transport zones, are shown for the Proposed Action and each alternative in Tables 4.17-1 (Vegetation and Landform Cover Types for the Proposed Action and Alternatives) and 4.17-2 (Special-status Vegetation and Habitat Impacts for the Proposed Action and Alternatives).

Table 4.17-1. Vegetation and Cover Types for the Proposed Action and Alternatives

	Proposed Action[1]	Alternative 1[1] (Reduced Footprint)	Alternative 2[1] (Avoidance)
Solar Facility Site			
Agriculture	0	0	0
Desert dry wash woodland	190	54	0
Developed	0	0	0
Sonoran creosote bush scrub	2,433	2,330	1,290
Stabilized and partially stabilized dunes	147	147	35
Unvegetated ephemeral dry wash	585	505	296
Total solar facility site	**3,356**	**3,036**	**1,621**
Gen-tie Route			
Agriculture	6	6	6
Desert dry wash woodland	21	21	21
Developed	1	1	1
Sonoran creosote bush scrub	128	128	117
Stabilized and partially stabilized dunes	0	0	2
Unvegetated ephemeral dry wash	8	8	12
Total gen-tie route	**166**	**166**	**160**

1 - Proposed Action and Alternatives 1 and 2 acreages based on vegetation mapping by Ironwood (2017).

Table 4.17-2. Special-status Vegetation and Habitat Impacts for the Proposed Action and Alternatives

Impact acreages[1]	Proposed Action	Alternative 1 (Reduced Footprint)	Alternative 2 (Avoidance)
Sand Transport			
Direct Impacts:[2]			
Zone I	0	0	0
Zone II	0	95	0
Zone III	870	737	68
Indirect Impacts:[3]			
Zone I	0	0	0
Zone II	348	348	0
Zone III	73	73	0
Waters of the State			
Direct Impacts:			
Desert dry wash woodland	190	54	0
Unvegetated ephemeral dry wash	585	505	296
Total Direct	775	559	296
Indirect (i.e., downstream) Impacts:			
Desert dry wash woodland	0	n/a[4]	n/a[4]
Unvegetated ephemeral dry wash	18	n/a[4]	n/a[4]
Total Indirect	18	n/a[4]	n/a[4]
Upland			
Stabilized and partially stabilized desert dunes	147	147	35

Source: Ironwood (2017), CEC (2010), BLM (2013).

1 - Impact acreages exclude gen-tie routes. Impact acreages for the Proposed Action, Alternative 1, and Alternative 2 were calculated using the GIS for the sand transport zones from the PSPP.

2 - Direct sand transport impacts based on 2017 mapping of sand transport zones for the Proposed Action and Alternatives 1 and 2.

3 - Indirect impacts for Alternatives 1 are assumed to be no more than the Proposed Action and possibly substantially less than Alternative 1 due to reduced project acreage and open wash channel. Indirect sand transport impacts for Alternative 2 are assumed to be 0 because the Project remains entirely outside the sand transport corridor.

4 - Indirect ephemeral drainage impacts of Alternatives 1 and 2 have not been calculated, but are expected to be substantially less than the Proposed Action due to avoidance of the major drainageway.

The project description includes a series of APMs applicable to biological resources. APMs 1, 2, 5, and 7 are general measures that would benefit all biological resources. APM-1 requires biological monitoring during pre-construction, construction, and decommissioning activities to ensure avoidance and minimization measures are implemented. APM-2 requires a worker education program to train workers on the required measures for avoiding and minimizing impacts to biological resources. APM-5 requires the appropriate use and disposal of herbicides and pesticides. APM-7 requires various impact and avoidance measures to be used as general standard practices, including minimizing removal of natural vegetation. Other APMs that may be relevant to vegetation resources are APMs 24, 29, 30, and 43. APM-24, while aimed at protection of cultural resources, also requires avoiding desert vegetation communities. APM-29 and APM-30 address prevention and remediation of toxic spills on soil, which would also avoid and minimize impacts of toxic spills to vegetation resources. APM-43 addresses fire prevention, which would also avoid and minimize potential impacts of fire on vegetation resources.

In addition to the APMs, this section of the EIS/EIR identifies a series of mitigation measures to address each impact to vegetation resources. Mitigation Measures VEG-1 through VEG-8 are general measures that would benefit all biological resources. VEG-1 through VEG-5 require qualified biologists, with authority to implement mitigation measures necessary to prevent impacts to biological resources, to be on site during all construction activities. VEG-6 requires a Worker Environmental Awareness Program to train all workers to avoid impacts to sensitive biological resources. VEG-7 requires a Biological Resources Mitigation Implementation and Monitoring Plan that incorporates the mitigation and compliance measures required by local, state, and federal agencies regarding biological resources. VEG-8 describes Best Management Practices and other impact avoidance and minimization measures.

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The project disturbance area includes the solar field and related facilities and scattered facility or work activity locations within the gen-tie route. Most of the solar facility site would be impacted by some form of soil and vegetation disturbance, either from compaction, micro-grading, or disc-and-roll grading for installation of the solar arrays and associated facilities. A security fence would be installed around the perimeter of the solar facility.

Water would be drawn from up to ten on-site wells placed throughout the project site to facilitate construction watering and operational water needs. An off-site source of water may also be used for construction watering and would come from wells located in Desert Center. Three temporary large storage tanks would be used for water storage throughout the site during construction. A permanent large storage tank would be used during O&M. An estimated 497 to 700 acre-feet per year (afy) would be needed during the 30-month construction period. Operational water usage is estimated at 15 to 41 afy.

Solar field development would maintain sheet flow of stormwater runoff where possible, with water exiting the site in existing natural contours and flow routes. Intermittent streams would be defined and protected within the project area. The use of retention basins would be determined upon final engineering of the project site. Existing small to moderate ephemeral washes would remain intact at locations capable of being traversed by installation equipment. Where paved roads cross larger ephemeral washes, culverts would be constructed to withstand a 100 year, 24-hour storm event.

The Project's lifespan is estimated to be approximately 30 years, after which, if permanent closure is appropriate, decommissioning would occur. See Section 2 (Proposed Action and Alternatives) for additional details regarding project facilities, construction, O&M, and decommissioning.

Proposed Action: Direct Effects

The project site consists almost entirely of native habitats, including Sonoran creosote bush scrub, desert dry wash woodland, stabilized and partially stabilized desert dunes, and unvegetated ephemeral dry wash, as well as state waters and other resources (see Section 3.17 – Vegetation

Resources). The Project's direct effects to vegetation resources would include loss and fragmentation of habitat and native plant communities, loss of ecological functions, and destruction of special status plants. These impacts are detailed below. The direct impacts of the Proposed Action on vegetation, habitat, and the processes that support them also could impact special status plant species, discussed below, and special status wildlife species, discussed in Section 4.21 (Wildlife Resources).

Sand Transport System

As described in Sections 3.14 (Soil Resources) and 3.17 (Vegetation Resources), the project site lies within and adjacent to the Palen Dry Lake-Chuckwalla sand migration corridor, and a substantial portion of the project site is located within aeolian sand migration Zone III; see Figure 3.14-2, Sand Transport Zones Characterizing Varying Rates of Sand Transport. Aeolian processes play a major role in the creation and establishment of sand dune formations and habitat in the Chuckwalla Valley (BLM, 2011). The intrusion of the Proposed Action within an active sand transport corridor, in Zone II and Zone III, would have on-site and off-site impacts to the creation and maintenance of sand dunes. The Palen Dry Lake-Chuckwalla sand corridor is a major source of sand that supports downwind sand dunes and, because most sand transport takes place close the ground (within 10 feet of the ground surface), project fences and solar arrays would interrupt sand transport.

The PSPP PA/FEIS determined that impacts to the sand transport system and active sand dunes on and off the project site would be substantial but mitigable, primarily through off-site compensatory measures identified in that document. The direct impacts of the Proposed Action would be similar to and somewhat less than PSPP; see Table 4.17-2 and discussion in Section 4.14 (Soil Resources).

The impacts of the Proposed Action to the sand transport corridor would be mitigated through implementation of Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation), which would require off-site compensation for direct and indirect impacts to sand dune habitat. It is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase. Therefore, compensation required under Mitigation Measure WIL-10 may be accomplished through acquisition and management of off-site habitat or, if suitable compensation habitat is not available, through off-site habitat enhancement and restoration on BLM administered lands (e.g., by controlling weeds or off-highway vehicle access). However, it is also uncertain whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values. As a result, with implementation of Mitigation Measure WIL-10 to the extent it is feasible, the Proposed Action's direct effects on sand transport may remain only partially mitigated. The lack of certainty that WIL-10 will be effective mitigation results from the uncertain availability of compensation habitat and uncertain efficacy of enhancement or restoration measures. The proportion of the impact that may remain unmitigated cannot be quantified.

Vegetation Communities

Most of the project site is vegetated with Sonoran creosote bush scrub. This vegetation community is not ranked as sensitive (CDFG, 2010). Direct impacts to Sonoran creosote bush scrub would include the permanent loss and fragmentation of wildlife habitat and native plant communities,

including loss of ecological services such as wildlife cover, forage, microhabitat for other plants, and erosion protection.

Direct impacts to the Sonoran creosote bush scrub within the project site would be similar to and somewhat less than PSPP; see Table 4.17-1. APM-8 would reduce potential for site disturbance and vegetation removal during construction by using state of the art construction and installation techniques to be approved by BLM. In addition, Mitigation Measure WIL-4 (Desert Tortoise Compensatory Mitigation) would compensate for loss of vegetation and habitat, and VEG-8 (Impact Avoidance and Minimization Measures) provides further detail regarding avoidance and reduction of direct impacts to Sonoran creosote bush scrub.

Sensitive Natural Communities

Sensitive natural communities within the project site are desert dry wash woodland, unvegetated ephemeral dry wash, and stabilized and partially stabilized desert dunes; see Section 3.17 (Vegetation Resources). Desert dry wash woodland on the site matches the National Vegetation Classification System (NVCS) description of the Sonoran-Coloradan Semi-Desert Wash Woodland/Scrub used in the DRECP Final EIS (BLM, 2015), and is identified as a riparian vegetation type, subject to certain Conservation Management Actions (CMAs). The Project is considered a pending project under the CDCA Plan as amended by the DRECP LUPA, and not subject to the requirements in the DRECP LUPA. The proposed project is subject to the BLM's Northern and Eastern Colorado Desert Coordinated Management Plan (NECO; BLM CDD, 2002), which specifies habitat compensation at a 3:1 ratio. Under the DRECP LUPA CMAs, the same vegetation would be subject to setbacks and avoidance and, where impacts are not avoided, compensation at a 5:1 ratio.

Ephemeral washes (both vegetated and unvegetated) provide unique habitat (distinct from the surrounding uplands), and refuge (cooler shaded cover) for a variety of wildlife. Desert dry wash woodland provides additional structural elements of food, cover, nesting and breeding habitat. The cover and linear pattern may also support wildlife movement through the area. Functional services of these communities include moderating soil and air temperatures, stabilizing channel banks and interfluves, seed banking and trapping of organic matter, silt, and fine sediment, and channel roughness that dissipates stream energy and aids in flood control (USEPA, 2008).

Grading within the project site and its ephemeral drainages would cause a direct impact on sensitive natural communities and would eliminate or impair the hydrological, biogeochemical, vegetation, and wildlife functions of these drainages. Direct impacts to sensitive natural communities within the project site would be similar to PSPP; see Table 4.17-1.

APM-8 would reduce potential for site disturbance and vegetation removal during construction by using state of the art construction and installation techniques to be approved by BLM. Mitigation Measure VEG-11 (Mitigation for Impacts to State Waters) specifies avoidance and mitigation for impacts to ephemeral drainages within and downslope of the project site. Mitigation Measure VEG-11 would minimize and offset impacts to ephemeral drainages and would assure compliance with California Fish and Game Code requirements that protect these waters. Mitigation Measure VEG-11 specifies acquisition of state waters within the Chuckwalla Valley basin, in the Palen watershed or adjacent watersheds, at a 1:1 ratio for unvegetated ephemeral dry wash and at a 3:1

ratio for desert dry wash woodland. The impacts of the Proposed Action to stabilized and partially stabilized dunes would be mitigated through Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation). Note that habitat suitability for special-status plants and animals corresponds more closely to the sand transport zones than to the vegetation type described here. The "stabilized and partially stabilized desert dunes" represent the sensitive plant community, but Mitigation Measure WIL-10 applies more broadly, to the windblown sand transport system habitat occupied by Mohave fringe-toed lizards (see Section 4-21).

Groundwater-dependent Vegetation Communities

No direct impacts to groundwater-dependent vegetation communities have been identified. Indirect impacts are discussed below.

Special Status Plants

The results of surveys conducted between 2009 and 2017 indicate that construction of the Proposed Action could directly impact several special status plant species. Harwood's eriastrum is the only BLM Sensitive Plant that may be impacted by the Project. Several other species classed as California Rare Plant Rank 2, 3 and 4 may occur in the area, and some of these may be directly impacted, although they were not located during field surveys. Direct impacts to special status plants may include destruction of individual plants, disruption of soil seed banks, and loss or degradation of habitat. See Section 3.17 (Vegetation Resources) and Table 3.17-3 for discussion of each species.

Surveys on the project site in 2016 found that the same special status species can be assumed to be present in similar locations and similar numbers as for PSPP. Follow-up surveys in 2017, a year of greater rainfall, identified several of these species in areas recorded. Therefore, direct impacts of the Proposed Action on special status plants are expected to be similar to PSPP. However, the population of desert annual plants typically expands and contracts with the normal wide variations in annual rainfall. Actual numbers of special status plants within the project site at the time of construction may be less than or greater than the numbers observed during surveys, and it is assumed that a seed bank exists in the soil and will be impacted by the Project. Anticipated impacts to each special-status species are described in the following paragraphs.

Harwood's eriastrum (*Eriastrum harwoodii*) (CRPR 1B.2, BLM Sensitive). Harwood's eriastrum was not found within the project site during surveys between 2009 and 2016, but it was found in the dunes to the east of the Proposed Action. During the 2017 surveys, 46 Harwood's eriastrum, locations, consisting of approximately 940 plants on about 87.1 acres of habitat (area of occupied habitat was estimated by calculating acreage of a 250-foot area surrounding each recorded occurrence), were identified within the Project primarily within Sand Transport Zone II. Sixteen additional observations consisting of approximately 867 Harwood's eriastrum were recorded incidentally within Sand Transport Zone I and II outside of the Project during the 2017 surveys: Suitable habitat for Harwood's eriastrum is found within the un-surveyed portions of Zones I and II outside the Project, where it is likely to occur in similar densities.

The intermittent occurrence of living plants indicates a viable seedbank is likely to persist near areas of documented occurrences and Harwood's eriastrum is presumed present on site, in the general localities and numbers previously recorded, even in years when it is not seen above-

ground. Botanical field surveys in recent years have identified many new occurrences suggesting that Harwood's eriastrum may be more common and widespread in the project area than previously known. The project would impact approximately 87.1 acres of documented occupied habitat and all additional acreage of potentially suitable sandfield habitat within the project footprint area.,

Harwood's milkvetch (*Astragalus insularis* var. *harwoodii*) (CRPR 2B.2). Spring 2010 surveys identified a total of about 146 Harwood's milkvetch individuals in the study area, including seven plants on the project site (CEC, 2010). Many of the 139 plants documented in the buffer area for the Proposed Action were located in close proximity to the northern boundary of the proposed site. No Harwood's milkvetch individuals were observed during 2016 surveys. Harwood's milk-vetch was observed on the proposed solar facility and along the gen-tie route in the 2017 surveys. The intermittent occurrence of living plants indicates a viable seedbank is likely to persist near areas of documented occurrences, and Harwood's milk-vetch it is presumed present on site, in the general localities and numbers previously recorded, even in years when it is not seen above-ground. The direct loss of about nine plants, as well as the associated habitat and seed bank, would be minor, given the number of plants and extent of occupied habitat found off the project site.

Ribbed cryptantha (*Cryptantha costata*) (CRPR 4.3). A large local population of ribbed cryptantha numbering in the millions was identified during the 2010 surveys for PSPP and ancillary surveys for other nearby projects (Tetra Tech, 2011). This species was not observed in the 2016 surveys probably because of the lack of rainfall and late survey timing. It was observed in Spring 2017 in the eastern part of the study area, within sand transport zone II, in densities similar to earlier reports. The intermittent occurrence of living plants indicates a viable seedbank is likely to persist near areas of documented occurrences and ribbed cryptantha is presumed present on site, in the general localities and numbers previously recorded, even in years when it is not seen above-ground. Ribbed cryptantha should be considered present at these general localities, presumably in similar qualities (Ironwood, 2017). Given the large number of ribbed cryptantha plants detected by these projects, within and outside of their project areas, it is reasonable to expect that ribbed cryptantha occurs in large numbers in similar habitats nearby. Because of the local abundance of ribbed cryptantha and its apparently stable range in California, the direct impacts of the Proposed Action to this species are not expected to be substantial.

Spiny abrojo (*Condalia globosa* var. *pubescens*) (CRPR 4.2). Spiny abrojo occurs at one location, consisting of three individual plants, along the gen-tie route approximately 800 feet west of the Red Bluff Substation, south of the I-10. Most of the project site is below the elevation where this species typically occurs, and additional occurrences on the proposed solar facility site are unlikely due to repeated negative survey results. Potential project impacts to this occurrence may be avoidable by avoiding it while siting gen-tie facilities and work areas. Adverse impacts, should they occur, would be unlikely to substantially affect overall spiny abrojo populations, given the plants secure status Arizona and Mexico and larger numbers in the region, including the Chocolate Mountains and Chuckwalla Bench of Imperial and Riverside Counties.

California ditaxis (*Ditaxis serrata* var. *californica*) (CRPR 3.2). A total of 22 California ditaxis plants were documented in the survey area during the 2010 surveys: 11 observations were located within a tight cluster along the gen-tie line alignment and the remaining 11 were outside of the project site in the survey buffer area. This species was not observed during surveys performed on the project site in 2016 or 2017 (Ironwood, 2017). If present, the loss of California ditaxis on the

project site would be substantial, given that there are no other documented occurrences of this species in the valley west of Desert Center.

The direct loss of California ditaxis plants would be reduced or avoided with implementation Mitigation Measure VEG-10 (Special-status Plant Avoidance and Minimization Measures). Section A of the measure would require the project proponent to limit the width of the work area, adjust the locations of certain project features, establish plant occurrences as fenced Environmentally Sensitive Areas, and a variety of additional measures aimed at preventing accidental impacts during construction.

Utah milkvine (*Funastrum utahense*) (CRPR 4.2). Utah milkvine was not found within project site during surveys between 2009 and 2017, but there is potentially suitable habitat within the project site, and this species has a moderate potential to occur there. Therefore, there may be direct impacts to Utah milkvine. Utah milkvine is not a BLM sensitive species, and its conservation rank (CRPR 4.2, "watch list") indicates that loss of plants on the site, should they occur, would not be substantial to its overall conservation.

Salton saltbush (Palen Lake saltbush) (*Atriplex sp. nov. J. Andre* or *Atriplex canescens* var. *macilenta*) (no BLM designation, but addressed as sensitive due to uncertain taxonomic status). Salton saltbush was not found in the project site and would not be directly affected by the Project.

Other Special Status Plants. The other special status plants listed in Table 3.17-3 were not found within the project site during surveys between 2009 and 2017, but suitable habitat is present. None of these species is managed by BLM as a sensitive species. Because these plants were not detected during surveys, direct impacts to these species are not anticipated. If any of these species occurs within the project site, direct impacts would be substantial only if a large portion of the local population, or habitat, is affected. Potential direct impacts, if any, would be mitigated through implementation of Mitigation Measure VEG-10 (Special-status Plant Avoidance and Minimization Measures).

Cacti, Yucca, and Native Trees

Several species of native cactus were found within the project site and would be destroyed if not salvaged from disturbance areas. Native trees such as smoke tree, honey mesquite ironwood, blue palo verde, and ocotillo would be destroyed in the project disturbance area. Microhabitat values and wildlife perching and nesting sites provided by cacti, yucca, and native trees would be entirely lost within the project disturbance area. Surveys on the Proposed Action site in 2016 found similar numbers and species of cacti, yucca, and native trees as for PSPP. Therefore, direct impacts to cacti, yucca, and native trees within the project site would be similar to PSPP.

APM-8 (Construction techniques to minimize disturbance of soils and vegetation) would reduce potential for site disturbance and vegetation removal during construction by using state of the art construction and installation techniques to be approved by BLM. Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures), VEG-13 (Revegetation of Temporarily Disturbed Areas), WIL-4 (Desert Tortoise Compensatory Mitigation) and VEG-11 (Mitigation for Impacts to State Waters) would avoid, reduce, of offset direct impacts to cacti, yucca, and native trees. Any vegetation to be salvaged and removed from the site (such as cactus or yucca) would be subject to sale at appraised value, according to CFR 43:5420.0-6. If the cacti or yucca is salvaged and/or

transplanted offsite, as approved by BLM, then this resource is not subject to sale since BLM retains ownership.

Jurisdictional Waters

Impacts to Water Resources are addressed in Section 4.19 (Water Resources). However, due to the relationship of watercourses to vegetation and habitat resources, and due to regulation of State jurisdictional waters by CDFW which focus on habitat values, impacts to potentially jurisdictional streambeds and associated riparian habitat are addressed in this section.

Federally jurisdictional waters are regulated by the U.S. Army Corps of Engineers (USACE); however, it is assumed there are no jurisdictional waters of the U.S. within the project site because the site is within a closed basin with no identifiable outlet and has no direct hydrologic connection to any navigable waters (USACE, 2010).

Desert dry wash woodland and unvegetated ephemeral dry washes identified within the project site are expected to meet criteria as jurisdictional waters of the State. The analysis of impacts to State-jurisdictional waters presented in this section is based on the prior analysis of the PSPP (CEC 2010: BLM 2011).

The extensive ephemeral drainage network on the project site provides many functions and values, including landscape hydrologic connections, stream energy dissipation during high-water flows that reduces erosion and improves water quality, water supply and water-quality filtering functions, groundwater recharge, sediment transport, storage, and deposition aiding in floodplain maintenance and development, nutrient cycling, wildlife habitat and movement or migration, and support for vegetation communities that help stabilize stream banks and provide wildlife habitat.

Project-related impacts to the ephemeral drainages within the project site would directly affect State jurisdictional waters and would eliminate or impair the hydrological, biogeochemical, vegetation and wildlife functions of these drainages.

As described under Proposed Action above, the Project would identify and protect intermittent streams on the project site. Rip rap would be installed at the discharge point to these streams within the project boundary to reduce flow energy and allow water absorption. If required by final engineering design, retention basins may be constructed to allow no increase in volume and no concentration of water leaving the project area. Direct impacts to jurisdictional waters of the State within the project site are expected to be less than PSPP because the PSPP project would have included engineered drainage channels along the project boundary to intercept flows and convey them around and through the Project for discharge along the northern project boundary; see Table 4.17-2.

Mitigation Measure VEG-11 (Mitigation for Impacts to State Waters) specifies avoidance and mitigation for impacts to ephemeral drainages within and downslope of the project site. Mitigation Measure VEG-11 would minimize and offset impacts to ephemeral drainages and would assure compliance with California Fish and Game Code requirements that protect these waters. Mitigation Measure VEG-11 specifies acquisition of state waters within the Chuckwalla Valley basin, in the Palen watershed or adjacent watersheds, at a 1:1 ratio for unvegetated ephemeral dry wash and at a 3:1 ratio for desert dry wash woodland.

Proposed Action: Indirect Effects

In addition to the direct effects, discussed above, vegetation resources may be subject to project-related indirect effects. Indirect effects include impairment of metabolic functions from fugitive dust, disruption of sand transport systems that maintain habitat, introduction and spread of non-native invasive plants, increased risk of fire, altered drainage patterns, erosion and sedimentation of disturbed soils, chemical and herbicide drift, impacts to groundwater-dependent plants communities from groundwater withdrawal, and degradation of habitat. These impacts are detailed below.

Sand Transport System

In addition to direct impacts on sand habitat within the project site, the Proposed Action would have offsite impacts, interrupting the movement of sand across the project site, and would deflate downwind sand dunes, gradually diminishing their depth and extent over time as sand output exceeds sand input. New sand that would have been transported across the project footprint from upwind could be cut off by project structures. The extent of this "sand shadow" for the PSPP selected alternative was calculated as approximately 95 acres, with the majority of the impact to Zone II (PWA, 2010); see Table 4.17-2. (Zone II is the more active portion of the sand transport system within the project site.) The sand shadow impacts for the Project would be similar to PSPP.

Part of the sediment-delivery system that contributes to active sand dunes northeast of the project area consists of fluvial depositional areas fed episodically by ephemeral streams. Finer fluvial sediments (typically sand size and finer) are mobilized in the sand transport corridor, which may be recharged with fine-grained sediment during large flood events. Project construction on the alluvial fans and alteration of stream channels may reduce the amount of fluvial sediment reaching the depositional areas upwind of sand dunes. The PSPP would have required leveling the terrain and installing drainage channels to accommodate the installation of solar parabolic troughs. The Proposed Action would preserve sheet flow and existing ephemeral washes on the site where possible. Impacts of the Proposed Action on fluvial sand transport would be similar to and somewhat less than PSPP.

The indirect impacts of the Proposed Action on sand dunes and the processes that support them also could impact vegetation communities, sensitive natural communities, and special status plant species, discussed below, and special status wildlife species, discussed in Section 4.21 (Wildlife Resources).

The PSPP PA/FEIS determined that indirect impacts to the sand transport system and active sand dunes on and off the project site would be substantial but mitigable, primarily through off-site compensation measure identified in that document, either by acquisition and management of off-site habitat, or through off-site habitat enhancement and restoration. Impacts of the Proposed Action would be similar to and somewhat less than PSPP. The indirect impacts of the Proposed Action to the sand transport corridor would be offset through implementation of Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation). However, it is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase, or whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values. Therefore, with implementation of Mitigation Measure WIL-10 (to the extent it is feasible, as described above), the Proposed Action's indirect effects on sand transport may remain only partially mitigated. No additional feasible mitigation

measures are available. The proportion of the impact that may remain unmitigated cannot be quantified.

Vegetation Communities

In addition to the direct impacts discussed above, indirect effects to Sonoran creosote bush scrub include disturbance from dust, introduction and spread of non-native invasive plants, increased risk of fire, altered drainage patterns, erosion and sedimentation of disturbed soils, chemical and herbicide drift, and degradation of habitat. The Proposed Action would utilize site preparation techniques that would minimize the required volume of earth movement, such as micro-grading or disc-and-roll grading. Indirect impacts of the Proposed Action on Sonoran creosote bush scrub would be similar to PSPP.

APM-8 would reduce potential for site disturbance and vegetation removal during construction by using state of the art construction and installation techniques to be approved by BLM. Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures), WIL-4 (Desert Tortoise Compensatory Mitigation), and VEG-9 (Weed Management Plan) would avoid, reduce, and compensate for indirect impacts to Sonoran creosote bush scrub.

Sensitive Natural Communities

In addition to direct impacts from the Proposed Action, desert washes downstream from the project site also would be subject to an indirect impact as a result of changes to upstream hydrology, with downstream vegetation in washes potentially deprived of flows or receiving lower or higher volumes and velocities of water than current conditions. Indirect impacts to stabilized and partially stabilized dunes include disruption of the sand transport corridor resulting in downwind impacts to sand dune habitat; introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; and fragmentation and degradation of habitat.

A total of 18 acres of jurisdictional State waters (unvegetated ephemeral dry washes) were delineated downstream of the PSPP project site, encompassing the full downstream reach of waters that would likely be indirectly affected by the PSPP. Construction techniques and hydrology impacts for the Proposed Action would differ from PSPP, but the Proposed Action has the potential to cause indirect effects to the same 18-acre downstream jurisdictional area.

APM-4 would implement integrated weed management and APM-8 would minimize site disturbance and vegetation removal during construction. Mitigation Measure VEG-11 (Mitigation for Impacts to State Waters) specifies avoidance and mitigation for impacts to ephemeral drainages within and downslope of the project site. Mitigation Measure VEG-11 would minimize and offset impacts to ephemeral drainages and would assure compliance with California Fish and Game Code requirements that protect these waters. Mitigation Measure VEG-11 specifies acquisition of state waters within the Chuckwalla Valley basin, in the Palen watershed or adjacent watersheds, at a 1:1 ratio for unvegetated ephemeral dry wash and at a 3:1 ratio for desert dry wash woodland. The impacts of the Proposed Action to stabilized and partially stabilized dunes would be mitigated through implementation of Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation). Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures) and VEG-9 (Weed Management Plan) would avoid, reduce, and compensate for indirect impacts to sensitive natural communities.

An effective Integrated Weed Management Plan, as required under APM-4 and Mitigation Measure VEG-9, is likely to necessitate herbicide use to control invasive species. Herbicides can pose risks to terrestrial and aquatic vegetation. Most aquatic herbicides, and several terrestrial herbicides, are non-selective and could adversely impact non-target vegetation. Accidental spills and herbicide drift from treatment areas could be particularly damaging to non-target vegetation on BLM land, and crop plants or other vegetation found on privately owned lands near treatment areas. As specified in Mitigation Measure VEG-8, the Project's Integrated Weed Management Plan (IWMP) will include specific measures to avoid application at project perimeters, in the vicinity of native vegetation, or special status plants, and to avoid overspray or spillage in any areas. In addition, the IWMP will describe proposed usage and formulations of herbicides. Use of herbicides would be in accordance with the measures and standard operating procedures in the BLM's 2007 *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (PFEIS) and a site-specific Environmental Assessment would be prepared for the project. Complying with the measures and standard operating procedures in the Herbicide PFEIS, MM PHS-9, as well as other limitations to be specified in the IWMP, would avoid potential adverse effects of herbicides to native vegetation and special-status plants. Buffer zones would be used to reduce the risks to vegetation from herbicide treatments. Risks to vegetation from proposed herbicides would be similar to, or less than, risks from currently available herbicides.

Groundwater-dependent Vegetation Communities

Groundwater pumping may have indirect effects on groundwater-dependent vegetation communities. The effects of groundwater pumping may take many years to appear, depending on the degree of separation in the confining layers between the shallow aquifer (supporting plants) and deep aquifers (where pumping would occur). Analysis for the PSPP determined that groundwater levels near the Project's water supply wells would decline between 0.1 and 5 feet within a 2-mile radius of the well during the construction and operation. Vegetation communities that may depend in part or in full on groundwater are located within the 2-mile radius. The groundwater-dependent ecosystems and other habitats at risk are documented as rare natural communities and are described in Section 3.17 (Vegetation Resources). Additional information on groundwater may be found in Sections 3.19 and 4.19 (Water Resources).

Most desert plants are shallow-rooted, drought-adapted species, supported by precipitation and soil moisture, rather than groundwater. Groundwater pumping is not expected to affect widespread upland vegetation such as Sonoran creosote bush scrub. Groundwater pumping could affect certain groundwater-dependent plants near Palen Dry Lake if it lowers the water table beyond their rooting depth.

Declining water tables may reduce the amounts of salts and water wicked to the surface by capillary action, potentially altering the chemistry of surface soils (Patten et al., 2007) around the playa (Palen Lake) margins. If the surface salinity decreases, it could render the habitat unsuitable for the halophytes (salt-adapted plants) that make up these ecosystems, which includes several rare or special status plants, and cause a habitat conversion to non-halophytes (Dodd and Donovan, 1999). Reduced surface salinity may result if regional groundwater withdrawal lowers the water table where halophytic vegetation occurs around Palen Dry Lake. If the vegetation is dependent on the groundwater aquifer, but the decline in water table depth is minor or temporary (i.e., a minor

drawdown and restored to spring baseline levels through subsequent rainfall events following construction), the effects may be minor or temporary, depending on the time required to recharge the impacted aquifer. In the absence of sufficient rainfall, the effects may be long-term.

The Proposed Action would utilize much less groundwater than PSPP. Groundwater use for PSPP for construction was estimated at 5,750 acre-feet per year (afy) for the 39-month duration of construction and annual groundwater use during the O&M phase was estimated at 300 afy. The annual water usage during construction of the Proposed Action is estimated at 497 to 700 afy for the projected 30 months of construction. The average total annual water usage during operation of the Proposed Action is estimated at 15 to 41 afy. Impacts of the Proposed Action on phreatophytes due to groundwater withdrawal would be expected to be substantially less than PSPP. APM-37 requires a Groundwater Monitoring and Mitigation Plan, including water conservation measures. Mitigation Measures VEG-14 (Groundwater-dependent Vegetation Monitoring) and VEG-15 (Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources) would augment APM-37 by specifying details required in the groundwater monitoring plan, as well as monitoring vegetation potentially affected by groundwater pumping (VEG-14), and to mitigate such effects if detected (VEG-15).

The Applicant's proposed APM-41 requires analysis of potential impacts of groundwater extraction on resources in Joshua Tree National Park and measures to reduce or eliminate such impacts, although monitoring and remedial action specified under MMs VEG-14 and VEG-15 would identify any such effect much earlier than it could be detected in Joshua Tree National Park. With implementation of these mitigation measures, any potential impacts of the Proposed Action to groundwater-dependent plant communities would be avoided or offset.

Special Status Plants

Indirect impacts to special status plants may include introduction and spread of invasive plants; alteration of the surface hydrology and basic geomorphic processes that support rare plants and their habitat (e.g., disrupted aeolian and fluvial sand transport processes from obstructions and diversions); population fragmentation and disruption of gene flow; potential impacts to pollinators; increased risk of fire; erosion and sedimentation of disturbed soils which render the habitat vulnerable to invasion by non-native invasive plants; disturbance of the structure and ecological functioning of biological soil crusts which affects seed germination, reduces soil nutrition and carbon sequestration, and renders the soil vulnerable to water and wind erosion (Belnap and Eldridge, 2001); herbicide and other chemical drift; and disruption of photosynthesis and other metabolic processes from fugitive dust during construction and operation of the Proposed Action. Groundwater pumping may also indirectly affect off-site special-status plants.

Following construction, invasive species could occupy disturbed soils within the project site and then spread into adjacent undisturbed habitats, naturally disturbed habitats such as dunes and washes are particularly vulnerable to colonization by weeds. The potential spread of Sahara mustard, which is already present along roads and near the freeway, is a continuing threat. The primary conduit for spread, however, is along roads and transmission corridors. The dramatic increase in vehicle use of the roads in the project vicinity and construction of a transmission corridor and new roads is expected to increase the spread of this highly invasive wildland pest. Sahara mustard has shown a clear negative impact on native flora. Sahara mustard can form dense stands

and potentially crowd out native annual plants. Sahara mustard plants growing early in the season may consume available soil moisture, which may adversely affect native annuals which start growing a little later in the season (Barrows et al., 2009).

Tamarisk, Russian thistle, Sahara mustard and Mediterranean grass are present in the project area and are expected to increase as a result of construction- and operation-related disturbance. The proliferation of many non-native plants has dramatically increased the fuel load and frequency of fire in many desert ecosystems (Lovich and Bainbridge, 1999). Unlike other ecosystems in California, fire was not an important part of desert ecosystems and most perennials are poorly adapted to even low-intensity fires. The potential spread or proliferation of non-native annual grasses, combined with the proximity to ignition sources could increase the risk of fire, and the effects to desert communities would be harmful, particularly to cacti and most native shrubs. After fire, creosote and other native shrubs are typically replaced by short-lived perennials and non-native grasses (Brown and Minnich, 1986).

Wildfires caused by construction or operations are expected to be rare, but the increase in project-related vehicle use in the area could increase the risk of ignition. Other temporary and permanent impacts from the Proposed Action could occur to surrounding vegetation communities from grading activities creating fugitive dust, which can disrupt photosynthesis and other plant metabolic processes when heavy dust layers accumulate on vegetation near dust sources. The destruction of plants and soil crusts by windblown sand and dust also exacerbates the erosion of the soil and accelerates the loss of nutrients (Okin et al., 2001).

Indirect impacts of dust and weed introduction of the Proposed Action on special status plants are expected to be similar to PSPP. APM-4 requires measures to avoid and minimize the introduction and spread of invasive weeds. Mitigation Measure VEG-9 (Weed Management Plan) would require a detailed weed management plan, which also specifies detailed mapping, monitoring, and reporting. Mitigation Measure VEG-10 (Special-status Plant Avoidance and Minimization Measures) would require avoidance of special status plants and off-site mitigation and would also protect off-site occurrences from accidental impacts during construction, and indirect effects during O&M activities. In addition, VEG-10 would require confirmation of the ditaxis species (i.e., either common ditaxis or California ditaxis) reported on the gen-tie route in 2009 and 2010, to provide additional occurrence data (consistent with California ditaxis' are Plant Ranking of 3, indicating that additional information is needed. Mitigation Measures WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation) and VEG-11 (Mitigation for Impacts to State Waters) would require that compensatory mitigation for dunes and washes (habitat for many special status plants and animals) must be acquired within the Chuckwalla Valley region. Mitigation Measure VEG-13 (Revegetation of Temporarily Disturbed Areas) would reduce the indirect effects of dust, invasive weeds, and soil erosion by establishing native plant cover on temporarily disturbed sites within the project area. These mitigation measures would avoid, reduce, and compensate for indirect impacts on special status plants.

Noxious and Invasive Weeds

Construction activities and soil disturbance could introduce new noxious weeds to lands adjacent to the project site and its linear facilities, and could further spread weeds already present in the project vicinity. Potential impacts of invasive weeds are described above, under Special Status Plants.

Indirect impacts of the Proposed Action due to noxious and invasive weeds are expected to be similar to PSPP. APM-4 requires measures to avoid and minimize the introduction and spread of invasive weeds. Mitigation Measure VEG-9 (Weed Management Plan) would require implementation of a Weed Management Plan that describes non-native, noxious, or invasive weed species that occur or are likely to occur at the site and prescribes management actions to monitor and eradicate specified species. Mitigation Measure VEG-13 (Revegetation of Temporarily Disturbed Areas) would reduce the indirect effects of dust, invasive weeds, and soil erosion by establishing native plant cover on temporarily disturbed sites within the project area. These mitigation measures would minimize the Project's potential indirect impacts from introduction and spread of noxious weeds.

Jurisdictional Waters

In addition to direct impacts to jurisdictional waters, an additional 18 acres of jurisdictional State waters (unvegetated ephemeral dry washes) were delineated downstream of the project site, encompassing the full downstream reach of waters that would likely be indirectly affected by the PSPP. The Proposed Action is expected to have a similar downstream reach of jurisdictional State waters that would be indirectly affected as it has a similar footprint to the PSPP. As described under Proposed Action above, the Project would identify and protect intermittent streams on the project site and is expected to have similar and somewhat reduced indirect impacts as compared to PSPP.

Desert washes downstream from the project site could be indirectly impacted as a result of changes to upstream hydrology, with downstream vegetation in washes deprived of flows or receiving lower or higher volumes and velocities of water than current conditions.

Mitigation Measure VEG-11 (Mitigation for Impacts to State Waters) specifies avoidance and mitigation for impacts to ephemeral drainages within and downslope of the project site. Mitigation Measure VEG-11 would minimize and offset impacts to ephemeral drainages and would assure compliance with California Fish and Game Code requirements that protect these waters. Mitigation Measure VEG-11 specifies acquisition of state waters within the Chuckwalla Valley basin, in the Palen watershed or adjacent watersheds, at a 1:1 ratio for unvegetated ephemeral dry wash and at a 3:1 ratio for desert dry wash woodland.

Impacts Specific to Closure and Decommissioning

Potential impacts to vegetation resources from closure and decommissioning of the Proposed Action would involve residual disturbance of developed areas, as well as similar impacts from vehicle and equipment access and employees as noted for construction of the Project. APM-3 requires the specification of closure and decommissioning activities to address recontouring to restore the original topography, erosion control, and restoration of native vegetation. When permanent closure is appropriate, a decommissioning plan would be developed and submitted to the BLM for review and approval. Procedures would be designed to ensure public health and safety, environmental protection and compliance with all applicable laws, ordinances, regulations, and standards. Replanting and revegetation activities tied to closure and decommissioning are as yet unquantified, but would provide some benefit by providing some ecosystem functions to the project disturbance area and surrounding plant communities in the long term. In addition, Mitigation Measure VEG-12 requires preparing and implementing a Decommissioning and Reclamation Plan.

Alternative 1 – Reduced Footprint Alternative

Alternative 1, the Reduced Footprint Alternative, would be constructed within the same project boundary as the Proposed Action but would avoid the central desert wash across the project site for solar facilities or other project components (see Figure 2-8, Reduced Footprint Alternative). The Reduced Footprint Alternative would divide the Project into two separately fenced solar fields, with a gap of existing native vegetation between them, ranging from 1,750 feet to 2,300 feet wide. The acreage of permanent disturbance would be approximately 3,036 acres.

As summarized in Tables 4.17-1 and 4.17-2, direct and indirect impacts to vegetation communities, sensitive natural communities, and jurisdictional waters would be reduced from the Proposed Action. Most importantly, impacts to desert dry wash woodland and sand transport Zone II would be substantially reduced from the Proposed Action.

Alternative 1 would avoid the majority of the special-status plant locations as well as cacti and yucca locations, thus leading to reduced impacts to these species. Alternative 1 would reduce impacts to occupied Harwood's eriastrum (the only BLM sensitive species occurring on the site) habitat from 87.1 acres to 36.1 acres (Figure 4.17-1). Alternative 1 would result in substantial reduction of impacts to native trees (primarily palo verde and ironwood trees), which are mainly located within desert dry wash woodland vegetation. This alternative would allow the Project to substantially achieve the goal of the DRECP Conservation and Management Action (CMA), LUPA-BIO-RIPWET-1 to avoid riparian and wetland vegetation types. Therefore, Alternative 1 impacts to special status plants, cacti, yucca, and native trees would be reduced from the Proposed Action's impacts.

Mitigation Measures VEG 1 through VEG 13, as well as other measures cited in the analysis for the Proposed Action, would avoid, minimize, or offset impacts of Alternative 1 to vegetation resources, as described under the direct and indirect impacts analysis for the Proposed Action.

Alternative 2 – Avoidance Alternative

Alternative 2, the Avoidance Alternative, would be constructed within the same project boundary as the Proposed Action but would conform to avoidance and setback requirements of the DRECP Conservation and Management Actions (see Figure 2-9, Avoidance Alternative, and Table 2-6). Similar to Alternative 1, the Avoidance Alternative would divide the Project into two separately fenced solar fields, with a gap of existing native vegetation between them. In addition, the Avoidance Alternative would provide wider avoidance and setback areas. The acreage of permanent disturbance would be approximately 1,621 acres.

As summarized in Tables 4.17-1 and 4.17-2, direct and indirect impacts to vegetation communities, sensitive natural communities, and jurisdictional waters, and indirect impacts to the sand transport system would be substantially reduced from the Proposed Action. Most importantly, impacts to desert dry wash woodland and sand transport Zone II would be substantially reduced from the Proposed Action.

Alternative 2 would avoid nearly all special-status plant locations, as well as cacti and yucca locations, thus leading to reduced impacts to these species. It would avoid all occupied Harwood's eriastrum habitat (the only BLM sensitive species occurring in the Project area). Alternative 2

would result in substantial reduction of impacts to native trees (primarily palo verde and ironwood trees), which are mainly located within desert dry wash woodland vegetation. This alternative would allow the Project to substantially achieve the goal of the DRECP CMA, LUPA-BIO-RIPWET-1 (see Table 2-6) to avoid riparian and wetland vegetation types. Therefore, Alternative 2 impacts to special status plants, cacti, yucca, and native trees would be reduced from the Proposed Action's impacts.

Additionally, by avoiding the sand transport corridor and Mojave-fringe toed lizard habitat, Alternative 2 would comply with CMA LUPA-BIO-DUNE-2 and LUPA-DIO-DUNE-4 that require avoidance of dune formation and suitable habitat for Mojave-fringe toed lizard habitat.

The alternative would also require adherence to CMAs:

- LUPA-BIO-PLANT-2, avoidance setback of 0.25 mile for all Focus and BLM Special Status Species occurrences,
- LUPA-BIO-PLANT-3, limits overall impacts to suitable habitat for plant Focus and BLM Special-Status Species to a maximum of 1% of their suitable habitat in the LUPA Decision Area,
- LUPA-BIO-SVF-3, avoid creosote bush rings larger than 5 meters in diameter,
- LUPA-BIO-VEG-1, manage cactus, yucca, and other succulents with adherence to current BLM policy (see Forest Management in Section 3.17.1, Federal Policy),
- LUPA-BIO-VEG-5, follow applicable BLM state and national regulations and policies for salvage and transplant of cactus, yucca, other succulents, and BLM Sensitive plants, and
- LUPA-BIO-VEG-6, BLM may consider disposal of succulents through public sale, as per current up-to-date state and national policy (see Forest Management in Section 3.17.1, Federal Policy).

The CMAs requirements to avoid creosote bush rings would necessitate a site inventory to identify such creosote rings, if present, and could result in additional design revisions to avoid and protect them. The LUPA-BIO-PLANT-2 requirement to provide a 0.25-mile avoidance setback for BLM Sensitive Species would necessitate a large avoidance area surrounding the Harwood's eriastrum occurrence; the large setback would also minimize impacts to suitable Harwood's eriastrum habitat, in accordance with LUPA-BIO-PLANT-3. The remainder of the CMAs listed above would not affect the Project because these CMAs refer to existing policies that already regulate these resources.

Groundwater use for construction, and annual water usage during operation of Alternative 2 would presumably be about 50 percent less that the Proposed Action due to the reduced acreage. Potential impacts of Alternative 2, if any, on groundwater-dependent vegetation due to groundwater withdrawal would be less than the Proposed Action.

Mitigation Measures VEG 1 through VEG 13 as well as other measures cited in the analysis for the Proposed Action, would avoid, minimize, or offset impacts of Alternative 2 to vegetation resources, as described under the direct and indirect impacts analysis for the Proposed Action.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.17.3 Cumulative Effects

Geographic Scope

The following assessment of cumulative impacts is based primarily on a regional, qualitative evaluation of past, present and future foreseeable projects (including the Proposed Action) within the geographic scope of the DRECP Cadiz Valley and Chocolate Mountains Ecoregion Subarea (CVCM). This geographic region encompasses regional vegetation and habitat resources, regional special-status plant populations, and the physical and ecological processes that sustain these resources such as sand source, movement, and deposition areas; dry lakes and associated valley and mountain watersheds; and a series of isolated mountain ranges and the valley floors providing biological connectivity among them to sustain present-day plant and animal populations as well as likely future habitat as climate change proceeds. The CVCM encompasses 707,000 acres of BLM-administered lands within the DRECP area (excluding military lands, tribal lands, and BLM Open OHV Areas). Of this, 148,000 acres are in Development Focus Areas (DFAs); see Section 3.17.2 (Vegetation Resources: Existing Conditions).

For each cumulative effect the following questions were considered in making conclusions about the severity or significance of an effect:

- The health, status or condition of the resource as a result of past, present and reasonably foreseeable impacts;
- The contribution of the Proposed Action to the overall cumulative impact to the resource;
- The Project's mitigated effect, when added to the effects of the other projects; and
- Impact avoidance and minimization: any project design changes that were made, or additional opportunities that could be taken, to avoid and minimize potential impacts in light of cumulative impact concerns.

A number of past, present and future foreseeable projects (cumulative projects) were identified for the assessment of potential cumulative impacts, including the Proposed Action; see Section 4.1 (Environmental Consequences). The cumulative projects for each resource are listed in Table 4.17-3.

Table 4.17-3. Cumulative Scenario

Resource	Cumulative Geographic Scope	Elements to Consider	Cumulative Projects[1]
Sand Transport System	CVCM	Acreage of direct and indirect impacts including downwind sand shadow	• Blythe PV Project (21 MW) • Genesis Solar Energy Project • Desert Sunlight Solar Project • SCE Colorado River Substation • Desert Quartzite Solar • Crimson Solar • SunPower Project
Vegetation Communities	CVCM	Acreage of direct and indirect impacts to Sonoran creosote bush scrub	▪ West-wide Section 368 Energy Corridors ▪ Blythe PV Project ▪ McCoy Solar Project ▪ Genesis Solar Energy Project ▪ Blythe Solar Power Project ▪ Desert Sunlight Solar Project ▪ SCE Red Bluff Substation ▪ Devers–Palo Verde 1 Transmission Line ▪ Devers–Palo Verde 2 Transmission Line ▪ Blythe Energy Project Transmission Line ▪ SCE Colorado River Substation ▪ Desert Renewable Energy Conservation Plan ▪ Commercial and Residential projects ▪ Desert Southwest Transmission Line ▪ Sonoran Energy Project (licensed as Blythe Energy Project Phase II) ▪ Eagle Mountain Pumped Storage Project ▪ Rice Solar Energy Project ▪ Desert Quartzite Solar ▪ Crimson Solar ▪ Blythe Mesa Solar Project ▪ Desert Harvest Solar Farm ▪ DC 50 Solar Project ▪ SunEdison Jupiter Project (CACA 56477) ▪ First Solar Development, LLC (CACA 56782) ▪ SunPower Project ▪ Plot Plan No. 23577, Revised Permit No 2
Sensitive Natural Communities	CVCM	Acreage of direct and indirect impact to sensitive natural communities identified in Section 3.17 (Vegetation Resources)	Same as for Vegetation Communities
Groundwater-dependent Vegetation Communities	CVGB	Acreage of direct and indirect impact to groundwater-dependent communities	• Genesis Solar Energy Project • Desert Sunlight Solar Project • Desert Southwest Transmission Line • Eagle Mountain Pumped Storage • Desert Harvest Solar Farm • DC 50 Solar Project • SunEdison Jupiter Project (CACA 56477) • First Solar Development, LLC (CACA 56782) • SunPower Project • Plot Plan No. 23577, Revised Permit No. 2

Table 4.17-3. Cumulative Scenario

Resource	Cumulative Geographic Scope	Elements to Consider	Cumulative Projects[1]
Special Status Plants	CVCM	Species directly or indirectly affected by the Project	West-wide Section 368 Energy Corridors ▪ Genesis Solar Energy Project ▪ Desert Sunlight Solar Project ▪ Devers–Palo Verde 1 Transmission Line ▪ Devers–Palo Verde 2 Transmission Line ▪ Blythe Energy Project Transmission Line ▪ SCE Colorado River Substation ▪ Desert Renewable Energy Conservation Plan ▪ Desert Southwest Transmission Line ▪ Desert Quartzite Solar ▪ Crimson Solar ▪ Blythe Mesa Solar Project ▪ Desert Harvest Solar Farm ▪ SunEdison Jupiter Project (CACA 56477) ▪ SunPower Project ▪ Plot Plan No. 23577, Revised Permit No. 2
Jurisdictional Waters	Palen watershed and CVCM	Dry wash woodland and unvegetated ephemeral wash	Same as for Vegetation Communities

1 - See Table 4.1-1.
Source: BLM (2015)

Cumulative Impact Analysis

Sand Transport System. The Proposed Action and Alternatives 1 and 2 would affect the Palen Dry Lake-Chuckwalla sand transport corridor and habitat for dune dependent species. Additionally, existing projects (not subject to the DRECP) and foreseeable future projects subject to the DRECP could affect sand transport. Table 4.17-3 lists existing and reasonably foreseeable projects that could impact the sand transport corridor. For projects that have already undergone environmental review, these documents were reviewed for any effects to the sand transport; for projects that have not been reviewed, the projects were mapped against the geomorphic layer for sand from the DRECP. As noted in the DRECP, project specific mapping may change this determination. The cumulative projects listed in Table 4.17-3 have or could impact the Chuckwalla Valley sand transport corridor through directly or indirectly impeding sand transport, reducing the amount of sand that flows through the Chuckwalla Valley. Fencing and other infrastructure associated with the projects would impede sand transport and affect valuable habitat within this corridor, resulting in a cumulative blocking of the corridor along the western and eastern sides.

The solar projects now under review between Blythe and Desert Center would result in disturbance over 20,000 acres of desert habitat. These projects are listed in Table 4.17-3, and include Desert Quartzite, Crimson, Blythe Mesa, and SunPower's Arica. Nearly all of these projects have the potential to affect the regional sand transport system, at least at the edges. Mitigation for existing projects, projects under review, and CMAs from the CDCA Plan, as amended by the DRECP, for future projects, would reduce the effects of each individual renewable project permitted to the extent practicable, but there would likely be residual cumulative effects. These residual effects

would include long-term loss or degradation of sandfield and dune habitat for special-status plants and wildlife habitat with insufficient off-site compensation or restoration.

Future projects subject to the DRECP would incorporate applicable DRECP Conservation Management Actions (CMAs) including: LUPA-BIO-DUNE-1 (Aeolian Processes), LUPA-BIO-DUNE-2 (Sand Transport Corridor), LUPA-BIO-DUNE-4: (Mojave Fringe-Toed Lizard), LUPA-TRANS-BIO-4 (regarding transmission siting, including avoidance of sand transport corridors), DFA-VPL-BIO-DUNE-1 (minimizes siting in dune habitat), DFA-VPL-BIO-DUNE-2 (maximizes sand movement through project sites).

The Proposed Action's impacts to the sand transport corridor would be mitigated through measures identified in this document, including Mitigation Measure WIL-10 (Sand Dune Community/Mojave Fringe-toed Lizard Mitigation). However, it is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase and whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values.

Alternatives 1 and 2, like the Proposed Action, would require implementation of Mitigation Measure WIL-10 to the extent it is feasible. But given the potential lack of available compensation lands, these alternatives would also contribute to cumulative impacts affecting the sand transport corridor, dune habitat (stabilized and partially stabilized desert dunes), and dune dependent species. Alternatives 1 and 2 may remain only partially mitigated.

Vegetation Communities. Within the entire DRECP planning area, including the CVCM, renewable energy development in DFAs could result in adverse impacts to less than 1 percent of vegetation types overall (BLM, 2015). The majority of impacts would occur within desert scrub vegetation, including Sonoran creosote bush scrub.

Within the CVCM, the Proposed Action or Alternatives 1 and 2 would incrementally contribute to the cumulative loss of Sonoran creosote bush scrub. Of the 309,000 acres of this vegetation type within the CVCM, the Proposed Action (with nearly 4,000 acres of disturbance) would directly impact approximately 1.12 percent. The other solar projects now under review between Blythe and Desert Center would result in disturbance over 20,000 acres of undisturbed desert habitat. These projects are listed in Table 4.17-3, and include Desert Quartzite, Crimson, Blythe Mesa, and SunPower's Arica. Additional indirect effects to Sonoran creosote bush scrub include disturbance from dust, introduction and spread of non-native invasive plants, increased risk of fire, altered drainage patterns, erosion and sedimentation of disturbed soils, chemical and herbicide drift, and degradation of habitat.

Future projects subject to the DRECP within CVCM could affect Sonoran creosote bush scrub. In particular, EDF's 150 MW Desert Harvest Project (located about 8 miles northwest of the PSP) may be under construction at the same time as the Palen Solar Project, due to the potential for them to be linked through a single power purchase agreement. Those future projects would incorporate project-specific mitigation measures and/or applicable DRECP CMAs including: LUPA-BIO-3 (Resource Setback Standards), LUPA-BIO-7 (Restoration of temporary disturbed areas), LUPA-BIO-10 (Standard Practices for Weed Management), LUPA-BIO-15 (grading and compaction techniques), LUPA-BIO-COMP-1 (provides for habitat compensation); DFA-VPL-BIO-IFS-1 (maximizes siting in previously disturbed areas), and DFA-VPL-BIO-FIRE-1 (fire prevention).

The Project's impacts to Sonoran creosote bush scrub would be mitigated through measures identified in this document, including Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures), WIL-4 (Desert Tortoise Compensatory Mitigation), VEG-9 (Weed Management Plan), and APM-8 (construction techniques to minimize disturbance of soils and vegetation). With implementation of these mitigation measures, the cumulative contribution to impacts to Sonoran creosote bush scrub from the Proposed Action or Alternatives 1 and 2 would not be substantial.

Sensitive Natural Communities. The effects of the Proposed Action and Alternatives 1 and 2 to sensitive natural communities including desert dry wash woodland and stabilized and partially stabilized desert dunes are quantified for comparison in Table 4.17-2. All three alternatives would avoid sand transport Zone 1, and avoid or largely avoid sand transport Zone II. All three would impact sand transport Zone III, although the effects of Alternative 2 would be much less than the others. The proposed project would affect 190 acres of desert dry wash woodland, while the effects of Alternative 1 would be much less, and Alternative 2 would avoid this habitat.

Additionally, future projects subject to the DRECP could affect these same natural communities resulting in a cumulative loss of sensitive natural communities. The projects (e.g., Desert Quartzite, Crimson, and Desert Harvest) already under review or approved and not yet constructed in the Desert Center area and southwest of Blythe would cover over 20,000 acres, several times larger than the Proposed Action alone.

Those future projects would incorporate applicable DRECP CMAs including LUPA-BIO-9 (Water and Wetland Dependent Species Resources), LUPA-BIO-13 (General Siting and Design), LUPA-BIO-COMP-1 (habitat compensation), and all the CMAs listed above for cumulative impacts to sand transport and vegetation communities.

The Project's impacts to sensitive natural communities would be mitigated through measures identified in this document, including Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures), WIL-4 (Desert Tortoise Compensatory Mitigation), VEG-9 (Weed Management Plan), WIL-10 (Sand Dune Community/Mojave Fringe-toed Lizard Mitigation), VEG-11 (Mitigation for Impacts to State Waters), APM-4 (weed management), and APM-8 (construction techniques to minimize disturbance of soils and vegetation). With implementation of these mitigation measures, the contribution of the Proposed Action or Alternatives 1 and 2 to cumulative impacts to Sonoran creosote bush scrub would not be substantial.

Groundwater-dependent Vegetation Communities. Mitigation Measures VEG-14 (Groundwater-dependent Vegetation Monitoring) and VEG-15 (Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources) and APM-37 (water conservation measures) and APM-41 (groundwater impacts analysis) would identify any impact to groundwater-dependent vegetation communities and, if such an impact occurs, would mitigate it through remedial measures. Existing and future projects within CVCM listed in Table 4.17-3 would all use groundwater during construction and/or operations and could result in a cumulative effect to groundwater-dependent vegetation communities, depending actual effects of each project to groundwater-dependent vegetation. These effects, in turn, will be dependent on local groundwater conditions, water use for each project, and location of any groundwater-dependent vegetation relative to the Project's groundwater wells. The actual effects to groundwater-dependent vegetation for the proposed Project and alternatives, as well as other

projects identified in Table 4.17-3 are unknown and projecting the cumulative effects would require too much speculation for meaningful analysis. Existing and future projects would incorporate mitigation measures or applicable DRECP CMAs including: LUPA-BIO-3 (Resource Setback Standards), LUPA-BIO-COMP-1 (provides for habitat compensation), DFA-VPL-BIO-IFS-1 (maximizes siting in previously disturbed areas), and LUPA-BIO-COMP-1 (habitat compensation).

Special Status Plants. The Proposed Action or Alternatives 1 and 2 could affect special status plants, identified in Section 4.17.2. Only one BLM Sensitive Species, Harwood's eriastrum, would be directly affected. This species is found primarily in dunes, sandfields, and related habitats. Cumulative impacts to Harwood's eriastrum and its habitat could result from projects identified in Table 4.17-3 under "sand transport corridor." For Harwood's eriastrum, cumulative impacts to habitat would be similar to the impacts described above for the sand transport corridor.

The Proposed Action's impacts to Harwood's eriastrum would be mitigated through measures identified in this document, including Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures), VEG-9 (Weed Management Plan), VEG-10 (Special Status Plant Impact Avoidance and Minimization), WIL-10 (Sand Dune Community/Mojave Fringe-toed Lizard Mitigation), VEG-11 (Mitigation for Impacts to State Waters), and APM-4 (weed management). However, it is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase and whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values. Therefore, as for the Proposed Action, with implementation of Mitigation Measure WIL-10 to the extent it is feasible would result in the Proposed Action, the contribution to cumulative impacts from the Proposed Action to dune dependent species and Alternatives 1 and 2 may remain only partially mitigated. Future projects subject to the DRECP would incorporate applicable DRECP CMAs including LUPA-BIO-PLANT-2 (avoidance setbacks for Focus and BLM Sensitive Plant Species), LUPA-BIO-PLANT-3 (suitable habitat for special status plants), LUPA-BIO-SVF-1 (addressing special vegetation features), and all the CMAs listed above for cumulative impacts to sand transport and vegetation communities. With implementation of these mitigation measures, the contribution to cumulative impacts to Harwood's eriastrum from the Proposed Action or Alternatives 1 and 2 may remain only partially mitigated.

Other special-status plants, although not listed as threatened or endangered and not managed as BLM Sensitive Species, also could be cumulatively affected by the Proposed Action and projects identified in Table 4.17-3. Those future projects would incorporate applicable DRECP CMAs including LUPA-BIO-PLANT-2 (avoidance setbacks for Focus and BLM Sensitive Plant Species), LUPA-BIO-PLANT-3 (suitable habitat for special status plants), LUPA-BIO-SVF-1 (addressing special vegetation features), and all the CMAs listed above for cumulative impacts to sand transport and vegetation communities.

The Project's impacts to special status plants that are not listed as threatened, endangered, or sensitive would be mitigated through measures identified in this document, including Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures), VEG-9 (Weed Management Plan), VEG-10 (Special Status Plant Impact Avoidance and Minimization), WIL-10 (Sand Dune Community/Mojave Fringe-toed Lizard Mitigation), VEG-11 (Mitigation for Impacts to State Waters), and APM-4 (weed management). With implementation of these mitigation measures, in

combination with the lower level of conservation concern for species that are not listed as threatened, endangered, or sensitive, the contribution to cumulative impacts to other special status plants from the Proposed Action or Alternatives 1 and 2 would not be substantial.

Jurisdictional Waters of the State. The Proposed Action or Alternatives 1 and 2 would affect desert dry wash woodland and unvegetated ephemeral dry wash, which are expected to meet criteria as jurisdictional waters of the State. Of the 98,000 acres of desert dry wash woodland in the CVCM, the Proposed Action would directly impact approximately 0.21 percent. Acreage of unvegetated ephemeral dry wash in the CVCM has not been quantified (BLM, 2015). Additionally, future projects, some of which are subject to the DRECP, could affect State jurisdictional waters resulting in a cumulative effect. Within the entire DRECP planning area, including the CVCM, renewable energy development in DFAs would potentially result in adverse impacts to approximately 1 percent of jurisdictional waters and wetlands. Those future projects would incorporate mitigation measures or applicable DRECP CMAs including LUPA-BIO-3 (Resource Setback Standards), LUPA-BIO-COMP-1 (provides for habitat compensation), DFA-VPL-BIO-IFS-1 (maximizes siting in previously disturbed areas), and LUPA-BIO-COMP-1 (habitat compensation).

The Project's impacts to State jurisdictional waters would be mitigated through measures identified in this document, including Mitigation Measures VEG-7 (Biological Resources Mitigation Implementation and Monitoring Plan), VEG-8 (Impact Avoidance and Minimization Measures), WIL-4 (Desert Tortoise Compensatory Mitigation), VEG-9 (Weed Management Plan), VEG-10 (Special Status Plant Impact Avoidance and Minimization), WIL-10 (Sand Dune Community/Mojave Fringe-toed Lizard Mitigation), and VEG-11 (Mitigation for Impacts to State Waters). With implementation of these mitigation measures, the Proposed Action or Alternatives 1 and 2's contribution to cumulative impacts to jurisdictional waters of the State would not be substantial.

4.17.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are 16 APMs relevant to vegetation resources (Section 2.2.7, Chapter 2). Table 4.17-4 explains how these measures reduce project effects, and how they relate to mitigation measures recommended below.

Table 4.17-4. Applicant Proposed Measures for Vegetation Resources

APM #	Text	Explanation
APM-1	Requires biological monitoring during pre-construction, construction, and decommissioning to ensure that avoidance and minimization measures are implemented; requires report submittal directly to BLM.	Augmented by Mitigation Measures VEG-1 through VEG-5 (Designated Biologist Selection and Qualifications, Designated Biologist Duties, Biological Monitor Selection and Qualifications, Biological Monitor Duties, Designated Biologist and Biological Monitor Authority). VEG-1 through VEG-5 specify the required qualifications, duties, and authority of the Designated Biologist and Biological Monitors.
APM-2	Requires a worker education program to train workers on the required measures for avoiding and minimizing impacts to biological resources.	Superseded by Mitigation Measure VEG-6 (Worker Environmental Awareness Program [WEAP]). VEG-6 specifies the content of worker training, documentation of training, and the type of personnel that would be required to attend the training.

Table 4.17-4. Applicant Proposed Measures for Vegetation Resources

APM #	Text	Explanation
APM-3	Requires implementation of closure and decommissioning activities, including restoration of soils and vegetation.	Augmented by Mitigation Measure VEG-12 (Decommissioning and Reclamation Plan). VEG-12 specifies that the Decommissioning and Reclamation Plan shall include a cost estimate, and shall be consistent with the guidelines in BLM's 43 CFR 3809.550 et seq.
APM-4	Requires weed management actions to avoid the introduction and spread of invasive weeds.	Augmented by Mitigation Measure VEG-9 (Integrated Weed Management Plan). VEG-9 provides additional information on weed control and treatment requirements and by adding requirements for weed mapping and monitoring.
APM-5	Specifies measures for the use of herbicides and pesticides to avoid impacts on biological resources.	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) and VEG-9 (Integrated Weed Management Plan). VEG-8 prohibits use of rodenticides or other means of poisoning nuisance animals. VEG-9 provides additional information on requirements for safe use of herbicides.
APM-7	Lists general standard practices for the protection of biological resources. The standard practices listed in APM-7 include only one applicable to vegetation resources: minimize vegetation removal using drive and crush or cut and mow.	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures). VEG-8 specifies additional requirements for minimizing vegetation removal.
APM-8	Requires construction techniques minimizing disturbance of soils and vegetation.	Superseded by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures). VEG-8 specifies requirements for minimizing site disturbance and vegetation removal.
APM-24	Requires preservation or compensation of vegetation resources for cultural uses.	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures). VEG-8 specifies additional requirements for minimizing site disturbance and vegetation removal. The compensation component of APM-24 is superseded by Mitigation Measures WIL-4 and WIL-10, which require compensation for special-status wildlife habitat (see Section 4.21).
APM-29	Requires up to date practices to prevent toxic substances from leaching into soil.	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) and VEG-11 (Mitigation for Impacts to State Waters). VEG-8 specifies required avoidance, clean-up, and reporting of spills. VEG-11 identifies materials that may not be allowed to enter drainages or waters of the State.
APM-30	Requires an emergency response plan to address the clean-up of toxic spills.	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) and VEG-11 (Mitigation for Impacts to State Waters). VEG-8 specifies required avoidance, clean-up, and reporting of spills. VEG-11 identifies materials that may not be allowed to enter drainages or waters of the State.
APM-37	Requires water conservation measures.	Augmented by Mitigation Measure VEG-14 (Groundwater-dependent Vegetation Monitoring) and VEG-15 (Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources). VEG-14 specifies requirements for monitoring groundwater and groundwater-dependent vegetation. VEG-15 requires remedial actions if project-related impacts to groundwater-dependent vegetation are detected.
APM-41	Analyze Impacts of Groundwater Extraction on Joshua Tree National Park	Augmented by Mitigation Measure VEG-14 (Groundwater-dependent Vegetation Monitoring) and VEG-15 (Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources). VEG-14 specifies requirements for monitoring groundwater and groundwater-dependent vegetation. VEG-15 requires remedial actions if project-related impacts to groundwater-dependent vegetation are detected.
APM-43	Fire Prevention	The analysis has considered the implementation of APM-43 and determined that no additional mitigation is required to address fire-related impacts to biological resources.

Table 4.17-4. Applicant Proposed Measures for Vegetation Resources

APM #	Text	Explanation
APM-49	Aeolian Transport	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures). VEG-8 specifies additional requirements for minimizing site disturbance.
APM-50	Creosote Rings: Use GIS modeling to identify compensation mitigation lands that have an equal or greater likelihood of creosote ring occurrence	Augmented by Mitigation Measures WIL-4 and WIL-10, which require compensation for special-status habitat (see Section 4.21). Seven creosote rings are mapped within the project footprint.
APM-51	Salvage and Transplant of Cacti and Yucca	Augmented by Mitigation Measure VEG-13 (Revegetation of Temporarily Disturbed Areas). VEG-13 identifies BLM regulations for any cactus or yucca salvage and removal, according to CFR 43:5420.

Mitigation measures including avoidance, minimization, and compensation are recommended to offset direct, indirect, and cumulative impacts to vegetation resources and to assure compliance with state and federal laws such as the regulations protecting waters of the state. These mitigation measures are presented below.

Because this document is supplemental to the EIS/Staff Assessment for PSPP, the mitigation measures identified for PSPP have been largely retained, with minor revisions to account for differences between the Proposed Action and PSPP and reflect the roles of the lead agencies. The PSPP EIS included all biological resources mitigation in a single section, rather than separating them into Vegetation and Wildlife sections. As a result, some of the mitigation measures, particularly MM VEG-8, consist of avoidance, minimization, or compensation requirements that apply to vegetation and wildlife resources. Rather than separate these into respective vegetation and wildlife sections, the original content and organization are retained in this EIS.

Mitigation measures identified for the PSPP that are no longer applicable (e.g., in-lieu CESA mitigation for projects funded through the American Recovery and Reinvestment Act of 2009) are not included here. The numbering for mitigation measures has been revised from that used for PSPP, to reflect the organization of vegetation and wildlife impacts analysis presented in this document. Mitigation Measure VEG-13 (Revegetation of Temporarily Disturbed Areas) has been substantially revised to replace the PSPP Mitigation Measure BIO-27 because one of the goals of BIO-27 was to restore all temporarily disturbed areas to established, self-sustaining, climax stages of the affected native plant communities. Given the habitat compensation requirements identified in WIL-4 (Desert Tortoise Compensatory Mitigation) that are applicable for both temporary and permanent disturbance, and the proposed level of development proposed within the project site and the limited temporary disturbance areas (e.g., between rows of solar panels, along access roads) that would be available for revegetation, this goal is not considered feasible. Instead, VEG-13 requires revegetation of temporarily disturbed areas with native species for soil stabilization and weed control, which would be feasible within the context of the proposed solar project land use. See Table 4.17-5 for a crosswalk that lists the mitigation measure numbers for PSPP and the Proposed Action.

Table 4.17-5. Crosswalk for Mitigation Measures Identified in the Vegetation and Wildlife Sections of This SEIS/EIR to Conditions of Certification for the PSPP EIS and Staff Assessment

Measure	Measure Number (SEIS)	Condition of Certification (PSPP)
Vegetation		
Designated (Authorized) Biologist Selection and Qualifications	VEG-1	BIO-1
Designated Biologist Duties	VEG-2	BIO-2
Biological Monitor Selection and Qualifications	VEG-3	BIO-3
Biological Monitor Duties	VEG-4	BIO-4
Designated Biologist and Biological Monitor Authority	VEG-5	BIO-5
Worker Environmental Awareness Program (WEAP)	VEG-6	BIO-6
Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)	VEG-7	BIO-7
Impact Avoidance and Minimization Measures	VEG-8	BIO-8
Weed Management Plan	VEG-9	BIO-14
Special-Status Plant Impact Avoidance, Minimization and Compensation	VEG-10	BIO-19
Mitigation for Impacts to State Waters	VEG-11	BIO-21
Decommissioning and Reclamation Plan	VEG-12	BIO-22
Revegetation of Temporarily Disturbed Areas	VEG-13	BIO-27
Groundwater-dependent Vegetation Monitoring	VEG-14	BIO-23
Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources	VEG-15	BIO-24
In-lieu Fee Mitigation Option	Not applicable	BIO-28
Project Construction Phasing Plan	Not applicable	BIO-29
Wildlife		
Desert Tortoise Protection	WIL-1	BIO-9
Desert Tortoise Relocation/Translocation Plan	WIL-2	BIO-10
Desert Tortoise Compliance Verification	WIL-3	BIO-11
Desert Tortoise Compensatory Mitigation	WIL-4	BIO-12
Raven Management Plan and Fee	WIL-5	BIO-13
Pre-construction Nest Surveys and Avoidance Measures	WIL-6	BIO-15
Bird and Bat Conservation Strategy (formerly Avian Protection Plan)	WIL-7	BIO-16
American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures	WIL-8	BIO-17
Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures	WIL-9	BIO-18
Sand Dune/Mojave Fringe-toed Lizard Mitigation	WIL-10	BIO-20
Golden Eagle Inventory and Monitoring	WIL-11	BIO-25
Water Tank (formerly Evaporation Pond) Netting and Monitoring	WIL-12	BIO-26

Mitigation measures recommended for implementation at the Palen Solar Project include the following.

VEG-1 **Designated (Authorized) Biologist Selection and Qualifications.** The project owner shall assign at least one Designated Biologist to the Project. The project owner shall submit the resume of the proposed Designated Biologist(s), with at least three references and contact information, to the BLM's Authorized Officer (BLM AO) for approval in consultation with CDFW and USFWS. The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society;
3. At least one year of field experience with biological resources found in or near the project area;
4. Meet the current USFWS Authorized Biologist qualifications criteria (https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise.html), demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS; and
5. Possess a California ESA Memorandum of Understanding pursuant to Section 2081(a) for desert tortoise.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the BLM AO, in consultation with CDFW and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the mitigation measures.

VEG-2 **Designated Biologist Duties.** The project owner shall ensure that the Designated Biologist performs the activities described below during any site mobilization activities, construction-related ground disturbance, grading, boring, or trenching activities. The Designated Biologist may be assisted by the selected Biological Monitor(s) but remains the contact for the project owner and BLM AO. The Designated Biologist Duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the vegetation and wildlife resources mitigation measures and APMs;
2. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP, see Mitigation Measure VEG-7) to be submitted by the project owner;
3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat;
4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way;

6. Notify the project owner and BLM AO of any non-compliance with any biological resources condition of certification;
7. Respond directly to inquiries of BLM AO regarding biological resource issues;
8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report (see Mitigation Measure VEG-7);
9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures including that only authorized biologists are authorized to handle desert tortoise (https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise.html) and
10. Maintain the ability to be in regular, direct communication with representatives of CDFW, USFWS, and BLM AO, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Data Base.

VEG-3 **Biological Monitor Selection and Qualifications.** The Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to BLM AO. The resume shall demonstrate, to the satisfaction of the BLM AO, the appropriate education and experience to accomplish the assigned biological resource tasks. Biological Monitor(s) training by the Designated Biologist shall include familiarity with the vegetation and wildlife resources mitigation measures or APMs, BRMIMP, WEAP, and USFWS guidelines on desert tortoise surveys (https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise.html).

VEG-4 **Biological Monitor Duties.** The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of site mobilization activities, construction-related ground disturbance, fencing, grading, boring, trenching, or reporting. The Designated Biologist shall remain the contact for the project owner and the BLM AO.

VEG-5 **Designated Biologist and Biological Monitor Authority.** The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources mitigation measures. The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with vegetation and wildlife mitigation measures or APMs and/or order any reasonable measure to avoid take of an individual of a listed species. If required by the Designated Biologist and Biological Monitor(s), the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, boring, trenching, and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall:

1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;

2. Inform the project owner and the construction/operation manager when to resume activities; and
3. Notify the BLM AO if there is a halt of any activities and advise them of any corrective actions that have been taken or would be instituted as a result of the work stoppage.

If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist in notifying the BLM AO of non-compliance. Designated Biologist and Biological Monitors will not be held liable for any costs associated with work stoppage orders.

VEG-6 **Worker Environmental Awareness Program (WEAP).** The project owner shall develop and implement a project-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from the BLM AO. The WEAP shall be administered to all onsite personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site preconstruction, construction, operation, and closure. The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants;
2. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes, reptiles, or other wildlife shall be harmed;
3. Place special emphasis on desert tortoise, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
4. Include a discussion of fire prevention measures to be implemented by workers during project activities; direct workers to dispose of cigarettes and cigars appropriately and not leave them on the ground or buried;
5. Describe the temporary and permanent habitat protection measures to be implemented at the project site;
6. Review project guidelines regarding non-compliance issues and the consequences for non-compliance.
7. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
8. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines.

The specific program can be administered by the Designated Biologist or a competent individual(s) acceptable to the Designated Biologist.

VEG-7 **Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP).** The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), and shall submit the proposed BRMIMP to the BLM AO for review and approval. The project owner shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Desert Tortoise Relocation Translocation Plan, the Raven Management Plan, the Decommissioning and Reclamation Plan, Revegetation Plan, the Burrowing Owl Mitigation and Monitoring Plan, and the Integrated Weed Management Plan.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of sensitive biological resources that require temporary or permanent protection during construction and operation. The BRMIMP shall include complete and detailed descriptions of the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources mitigation measures identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring, and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion;
4. All sensitive biological resources to be avoided or mitigated by project construction, operation, and closure;
5. All required mitigation measures for each sensitive biological resource;
6. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
7. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
8. Clear and concise project procedures for non-compliance issues.
9. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
10. All performance standards and remedial measures to be implemented if performance standards are not met;
11. Biological resources-related facility closure measures including a description of funding mechanism(s);
12. A process for proposing plan modifications to BLM AO and appropriate agencies for review and approval; and

13. A requirement to submit any sightings of any special status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Data Base (CNDDB) per CDFW and BLM requirements; and

14. Specify content and format for monthly and annual Compliance Reports to be submitted to the BLM AO.

VEG-8 **Impact Avoidance and Minimization Measures.** The project owner shall undertake the following measures to manage the project site and related facilities during construction, operation and maintenance in a manner to avoid or minimize impacts to biological resources:

1. **Limit Disturbance Areas.** Minimize soil disturbance by locating staging areas, laydowns, and temporary parking or storage for linears in existing disturbed areas. Equipment maintenance and refueling shall not be conducted within 100 feet of any sensitive resource (for example, waters of the state, desert dry wash woodland, dune habitats, and rare plant populations). Limit the width of the work area near sensitive resources. Avoid blading temporary access roads where feasible and instead drive over and crush the vegetation to preserve the seed bank and biotic soil crusts. The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in disturbed areas lacking native vegetation and which do not provide habitat for special status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special status species habitat. All disturbances, project vehicles, and equipment shall be confined to the flagged areas.

   Construction Scheduling: A detailed construction schedule, including a map showing ground disturbing activities anticipated for the upcoming quarter, shall be provided to BLM prior to issuance of the NTP, and it shall be updated by the first day of each quarter. If solar field construction would result in construction pauses of longer than 90 days, ground disturbing activities for each phase shall be limited to the minimum area required for solar panel construction for that phase.

2. **Minimize Road Impacts.** New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.

3. **Minimize Traffic Impacts.** Vehicular traffic during project construction and operation shall be confined to existing routes of travel to and from the project site, and cross-country vehicle and equipment use outside designated work areas

shall be prohibited. The speed limit shall not exceed 25 miles per hour within the project area, on maintenance roads for linear facilities, or on access roads to the project site.

4. **Monitor During Construction.** In areas that have not been fenced with desert tortoise exclusion fencing and cleared, the Designated Biologist or Biological Monitor shall be present at the construction site during all project activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall walk ahead of equipment during brushing and grading activities to clear the area of biological resources. If desert tortoises are found during construction monitoring, procedures outlined in Mitigation Measure WIL-1 shall be implemented.

5. **Minimize Impacts of Transmission/Pipeline Alignments, Roads, and Staging Areas.** Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For construction activities outside of the plant site (transmission line, pipeline alignments) access roads, pulling sites, and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Reducing Avian Collisions with Power Lines* (APLIC, 2012), *Suggested Practices for Avian Protection on Power Lines* (APLIC, 2006) and *Mitigating Bird Collisions with Power Lines* (APLIC, 1994) or more current guidelines if available, to reduce the likelihood of large bird electrocutions and collisions. Where feasible avoid impacts to desert washes and special-status plants by adjusting the locations of poles and laydown areas, and the alignment of the roads and pipelines. Construction drawings and grading plans shall depict the locations of sensitive resources and demonstrate where temporary impacts to sensitive resources can be avoided and where they cannot.

6. **Avoid Use of Toxic Substances.** Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants. No fumigant, treated bait, or other means of poisoning nuisance animals, including rodenticides, will be used.

7. **Minimize Lighting Impacts.** Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat.

8. **Minimize Noise Impacts.** Loud construction activities (e.g., pile driving, or other) shall be avoided from February 15 to April 15, when it would result in noise levels over 65 dBA in nesting habitat (excluding noise from passing vehicles). Loud construction activities may be permitted from February 15 to April 15 only if:

    a. The Designated Biologist provides documentation (i.e., nesting bird data collected using methods described in Mitigation Measure WIL-6 and maps depicting location of the nest survey area in relation to noisy construction)

to the BLM AO indicating that no active nests would be subject to 65 dBA noise, OR

b. the Designated Biologist or Biological Monitor monitors active nests within the range of construction-related noise exceeding 65 dBA. The monitoring shall be conducted in accordance with Nesting Bird Monitoring and Management Plan approved by the BLM AO. The Plan shall include adaptive management measures to prevent disturbance to nesting birds from construction-related noise. Triggers for adaptive management shall be evidence of project-related disturbance to nesting birds such as: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment.

   The Nesting Bird Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of disturbance to the nesting bird.

9. **Avoid Vehicle Impacts to Desert Tortoise.** Parking and storage shall be located within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed outside the areas fenced with desert tortoise exclusion fencing it shall be left to move on its own. If it does not move within 15 minutes, a Designated Biologist may move it out of harm's way as described in the USFWS Desert Tortoise Field Manual (USFWS, 2013).

10. **Install Box Culvert.** To provide for connectivity for desert tortoise and other wildlife, the project owner shall install install one or more box culverts (depending on the length of the road, as determined by BLM) suitable for passage by desert tortoise and other wildlife under the project site access road. The box culvert shall be a concrete structure no less than 4 feet high and 6 feet wide with 3:1 side slopes and shall maintain a minimum of 18 inches of native material on the floor of the culvert at all times to facilitate tortoise movement.

11. **Avoid Wildlife Pitfalls.** To avoid trapping desert tortoise and other wildlife in trenches, pipes or culverts, the following measures shall be implemented:

    a. **Backfill Trenches.** At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the area fenced with desert tortoise exclusion fencing have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically throughout the day, at the

end of each workday, and at the beginning of each day by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist shall move the tortoise out of harm's way as described in the USFWS Desert Tortoise Field Manual (USFWS, 2013). Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed.

b. **Avoid Entrapment of Desert Tortoise.** Any construction pipe, culvert, or similar structure stored for one or more nights, shall be inspected for tortoises, birds, and other wildlife before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored.

12. **Minimize Standing Water.** Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises and common ravens to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and shall take appropriate action to remediate water ponding and reduce water application where necessary.

13. **Dispose of Road-killed Animals.** Road killed animals or other carcasses detected by personnel on roads associated with the project area will be reported immediately to a Biological Monitor or Designated Biologist (or Project Environmental Compliance Monitor, during project operations), who will promptly remove the roadkill. For special status species road-kill, the Biological Monitor or Designated Biologist (or Project Environmental Compliance Monitor, during project operations) shall contact CDFW and USFWS within 1 working day of detection of the carcass for guidance on disposal or storage of the carcass; all other road kill shall be disposed of promptly. The Biological Monitor shall provide the special status species record as described in Mitigation Measure WIL-3 below.

14. **Minimize Spills of Hazardous Materials.** All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the Project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

15. **Worker Guidelines.** During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons. Vehicular traffic shall be confined to existing routes of travel to and

from the project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on dirt access routes within desert tortoise habitat shall not exceed 15 miles per hour.

16. **Implement Sediment Control Measures near Desert Washes.** Standard erosion control measures shall be implemented for all phases of construction and operation where sediment runoff from exposed slopes threatens to enter waters of the State. Sediment and other flow-restricting materials shall be moved to a location where they cannot be washed back into the stream. Areas of disturbed soils (access and staging areas) which slope toward drainages shall be stabilized to reduce erosion potential.

17. **Monitor Ground Disturbing Activities Prior to Pre-construction Site Mobilization.** If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife.

18. **Control Unauthorized Use of the Project's Access Roads.** The project owner shall monitor and control any unauthorized use of the Project's roads with gates, signage, and fencing as necessary to minimize traffic-related roadkills and ORV disturbance off-roads.

19. **Implement Erosion Control Measures.** All disturbed soils and roads within the project site shall be stabilized to reduce erosion potential, both during and following construction. All areas subject to temporary disturbance shall be restored to pre-project grade and stabilized to prevent erosion and promote natural revegetation. Temporarily disturbed areas within the project area include, but are not limited to: linear facilities, temporary access roads, temporary laydown and staging areas. If erosion control measures include the use of seed, only locally native plant species from a local seed source shall be used. Local seed includes seeds from plants within the Chuckwalla Valley or Colorado River Hydrologic Units.

20. **Avoid Spreading Weeds.** Prior to the start of construction, flag and avoid dense populations of highly invasive noxious weeds. If these areas cannot be avoided, they shall be pre-treated by the methods described in Mitigation Measure VEG-9 (Weed Management Plan). Noxious weeds and other invasive non-native plants in the temporarily disturbed areas shall be managed according to the requirements in Mitigation Measure VEG-9.

21. **Salvage Topsoil.** Topsoil from the project site shall be salvaged, preserved and re-used for restoration of temporarily disturbed areas. Salvaged topsoil shall be collected, stored and applied in a way that maintains the viability of seed and soil crusts. The project owner shall excavate and collect the upper soil layer (the top 1 to 2 inches that includes the seed bank and biotic soil crust) as well as the lower soil layer up to a depth of 6 to 8 inches. The upper and lower soil layers shall be stockpiled separately in areas that will not be impacted by other grading, flooding, erosion, or pollutants. If the soil is to be stored more than 2

weeks it shall be spread out to a depth of no more than 6 inches to maintain the seed and soil crust viability. The project owner shall install temporary construction fencing around stockpiled topsoil, and signage that indicates whether the pile is the upper layer seed bank, or the lower layer, and clearly indicates that the piles are for use only in erosion control. After construction, the project owner shall replace the topsoil in the temporarily disturbed areas in the reverse order of stockpiling, starting with the 6-8-inch layer of subsoil, and then the seed-containing upper layer using a harrow or similar equipment to thinly distribute the layer to depths no greater than 1 to 2 inches.

22. **Decommission Temporary Access Roads with Vertical Mulching.** Discourage ORV use of temporary construction roads by installing vertical mulching at the head of the road to a distance necessary to obscure the road from view. Boulder barricades and gates shall not be used unless the remainder of the site is fenced to prevent driving around the gate or barricade. Designated ORV routes and roads shall not be closed.

23. **Wildlife-friendly Fencing.** To prevent potential entanglement of deer and other wildlife, all permanent project fencing, including perimeter security fencing, will be no less than 8 feet tall, constructed of chain link, and will not have barbed, razor, or other wire strung across the top. Project fence design(s) will be submitted to the BLM AO, CDFW, and USFWS for review and approval prior to installation. If installation of fencing is necessary to control recreational travel through the wash area post-construction, a non-barbed traditional four-wire ranch fence may be placed across the wash area, at the northern and southern ends of the wash, on-line with the perimeter fencing of the solar fields.

VEG-9 **Integrated Weed Management Plan.** The project owner shall prepare and implement an Integrated Weed Management Plan (IWMP, or Plan) that meets the approval of the BLM AO. The objective of the Plan shall be to prevent the introduction of any new weeds and the spread of existing weeds as a result of project construction, operation, and decommissioning. The Draft Weed Management Plan, submitted by the Applicant (AECOM 2010a, Attachment DR-BIO-100), shall provide the basis for the final Plan, subject to review and revisions from the BLM. The Plan shall include the following:

1. **IWMP Requirements.** The project owner shall provide a map to the BLM AO indicating the location weed infestation areas on the project site. The project owner shall provide a Plan for the Weed Management Areas which includes at a minimum the following information: specific weed management objectives and measures for each target non-native weed species; baseline conditions; a map of the Weed Management Areas; map of existing populations of target weeds within 100 feet of the project disturbance area and access roads; weed risk assessment; measures to prevent the introduction and spread of weeds; measures to minimize the risk of unintended harm to wildlife and other plants from weed control activities; monitoring and surveying methods; and reporting requirements. Weed control measures described in the Plan shall focus on prevention, early detection of new infestations, and early eradication for the life

of the Project. Weed control along the project linears shall be limited to the areas where soils were disturbed during construction. Weed monitoring shall occur a minimum of once per year during the late winter or early spring months to detect seedlings before they set seed. The focus of the Plan shall be on controlling onsite weeds and avoiding the introduction of new invasive weeds or the spread of highly invasive species, such as Sahara mustard. Non-native species with low ecological risk, or that are very widespread, such as Mediterranean grass, shall be noted, but control shall not be required. When detected, infestations of high priority species shall be treated immediately.

2. **Avoidance and Treatment of Dense Weed Populations.** The Plan shall include a requirement to identify dense populations of the most invasive non-native weeds and either: (a) treat the infested areas in the season prior to construction by removing and properly disposing of seed heads by hand, prior to maturity, or spraying the new crop of plants that emerge in early spring, the season prior to construction, to reduce the viable seed contained in the soil, or (b) remove the upper 2 inches of soil and dispose of it offsite at a sanitary landfill or other site approved by the County Agricultural Commissioner, or bury the infested soil (e.g., under the solar facility or in a pit) and cover the infested soil with at least 3 feet of uncontaminated soil.

3. **Cleaning Vehicles and Equipment.** The Plan shall include specifications and requirements for the cleaning and removal of mud and dirt carrying weed seed and weed plant parts from vehicles and equipment involved in project-related construction and operation. Vehicles and equipment working in weed-infested areas (including previous job sites) shall be required to clean the equipment tires, tracks, and undercarriage *before* entering the project area and before moving to infested areas of the project disturbance area to uninfested areas, and prior to leaving the project site. Cleaning shall be conducted on all track and bucket/blade components to adequately remove all visible dirt and plant debris. Cleaning using hand tools, such as brushes, brooms, rakes, or shovels, is preferred. If water must be used, the water/slurry shall be contained to prevent seeds and plant parts from washing into adjacent habitat.

4. **Safe Use of Herbicides.** The final Plan shall include detailed specifications for avoiding herbicide and soil stabilizer drift, and shall include a list of BLM-approved herbicides and soil stabilizers that will be used on the Project with manufacturer's guidance on appropriate use. The Plan shall indicate where the herbicides will be used, and what techniques will be used to avoid chemical drift or residual toxicity to special-status species and their pollinators, and consistent with the Nature Conservancy guidelines and the criteria under #5, below. Only weed control measures for target weeds with a demonstrated record of success shall be used, based on the best available information from sources such as The Nature Conservancy's Global Invasive Species Team, California Invasive Plant Council (http://www.cal-ipc.org/ip/management/plant_profiles/index.php), and the California Department of Food & Agriculture Encycloweedia: (https://www.cdfa.ca.gov/plant/ipc/encycloweedia/encycloweedia_hp.html).

5. **Weed Control.** The methods for weed control described in the final Plan shall meet the following criteria:

   a. **Manual.** Well-timed removal of plants or seed heads with hand tools; seed heads and plants must be disposed of in accordance with guidelines from the Riverside County Agricultural Commissioner.

   b. **Chemical.** Herbicides known to have residual toxicity, such as pre-emergents and pellets, shall not be used in natural areas. Only the following application methods may be used: wick (wiping onto leaves); inner bark injection; cut stump; frill or hack and squirt (into cuts in the trunk); basal bark girdling; foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on windless days, or with a squeeze bottle for small infestations (see Nature Conservancy guidelines described above);

   c. **Mechanical.** Disking, tilling, and mechanical mowers or other heavy equipment shall not be employed in natural areas but hand weed trimmers (electric or gas-powered) may be used. Mechanical trimmers shall not be used during periods of high fire risk and shall be used only with implementation of fire prevention measures.

VEG-10 **Special-Status Plant Impact Avoidance, Minimization and Compensation.** This condition contains the following three sections:

Section A: Special-Status Plant Impact Avoidance and Minimization Measures contains the Best Management Practices and other measures designed to avoid accidental indirect impacts to plants during construction, operation, and closure. The measures are required for special-status plants located outside of the project disturbance area and within 100 feet of the project disturbance area. The same measures shall also be implemented for plants within the project area that are avoided pursuant to Section B of this condition.

Section B: Avoidance Requirements for Special-Status Plants outlines the level of on-site avoidance required for any special status plants detected, and specifies when off-site mitigation is required.

Section C: Off-Site Compensatory Mitigation for Special-Status Plants describes performance standards for off-site mitigation through acquisition or restoration/ enhancement.

"Project disturbance area" encompasses all areas to be temporarily and permanently disturbed by the Project, including the plant site, linear facilities, and areas disturbed by temporary access roads, fence installation, construction work lay-down and staging areas, parking, storage, or by any other activities resulting in disturbance to soil or vegetation. The term "permanent project disturbance area" refers only to the solar facility; "linears" includes transmission lines, laydown areas, pipelines, and access roads.

The project owner shall implement the following measures in Section A, B, and C to avoid, minimize, and compensate for direct, indirect, and cumulative impacts to special-status plant species:

Section A: Special Status Plant Impact Avoidance and Minimization Measures

To protect all special status plants located outside of the project disturbance area and within 100 feet of the permitted project area from accidental direct and indirect impacts during construction, operation, and closure, the project owner shall implement the following measures:

1. **Designated Botanist.** An experienced botanist who meets the qualifications described below shall oversee compliance with all special status plant avoidance, minimization, and compensation measures described in this condition throughout construction and closure. The Designated Botanist shall oversee and train all other Biological Monitors tasked with conducting botanical survey and monitoring work. During operation of the Project, the Designated Botanist shall be responsible for protecting special status plant occurrences within 100 feet of the project boundaries.

2. **Surveyor Qualifications and Training.** Surveys shall be conducted by qualified botanists knowledgeable in the complex biology of the local flora and consistent with CDFW (2009) and BLM guidelines for surveyor qualifications. Each surveyor shall be equipped with a GPS unit and shall record a complete tracklog; these data shall be compiled and submitted. Prior to the start of surveys, all crew members shall, at a minimum, visit reference sites (where available) and/or review herbarium specimens of all BLM Sensitive plants, CNPS List 1B or 2 (Nature Serve rank S1 and S2) or proposed List 1B or 2 taxa, and any new reported or documented taxa, to obtain a search image. Because the potential for range extensions is unknown, the list of potentially occurring special-status plants shall include all BLM Sensitive taxa known to occur within the Sonoran Desert region and the eastern portion of the Mojave in California. The list shall also include taxa with bloom seasons that begin in the fall and extend into the early spring as many of these are reported to be easier to detect in fall, following the start of the fall rains.

3. **Special-Status Plant Impact Avoidance and Minimization Measures.** The project owner shall incorporate all measures for protecting special status plants in close proximity to the site into the BRMIMP (Mitigation Measure VEG-7). These measures shall include the following elements:

    a. **Site Design Modifications:** (1) Incorporate modifications to site design or construction techniques to minimize direct and indirect impacts to special status plants along the project linears to include: limiting the width of the work area; adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads to preserve the seed bank, and minor adjustments to the alignment of the roads and pipelines within the constraints of the ROW;

(2) These modifications shall be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP.

b. **Establish Environmentally Sensitive Areas (ESAs).** Prior to the start of any ground- or vegetation-disturbing activities, the Designated Botanist shall establish ESAs to protect avoided special status plants located outside of the project disturbance areas and within 100 feet of the boundary of construction. The locations of ESAs shall be clearly depicted on construction drawings, which shall also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs shall be placed a minimum of 20 feet from the uphill side of the occurrence and 10 feet from the downhill side. Where this is not possible due to construction constraints, other protection measures such as silt-fencing and sediment controls may be employed to protect the occurrences. Equipment and vehicle maintenance areas, and wash areas, shall be located 100 feet from the uphill side of any ESAs. ESAs shall be clearly delineated in the field with temporary construction fencing and signs prohibiting movement of the fencing or sediment controls under penalty of work stoppages and additional compensatory mitigation. ESAs shall also be clearly identified (with signage or by mapping on site plans) to ensure that avoided plants are not inadvertently harmed during construction, operation, or closure.

c. **Special Status Plant Worker Environmental Awareness Program (WEAP).** The WEAP (VEG-6) shall include training components specific to protection of special status plants as outlined in this condition.

d. **Herbicide and Soil Stabilizer Drift Control Measures.** Special status plant occurrences within 100 feet of the project disturbance area, and any occurrences avoided shall be protected from herbicide and soil stabilizer drift. The Integrated Weed Management Plan (VEG-9) shall include measures to avoid chemical drift or residual toxicity to special status plants consistent with guidelines such as those provided by the Nature Conservancy's The Global Invasive Species Team, the U.S. Environmental Protection Agency, and the Pesticide Action Network Database.

e. **Erosion and Sediment Control Measures.** Erosion and sediment control measures shall not inadvertently impact special status plants by using invasive or non-native plants in seed mixes, introducing pest plants through contaminated seed or straw, accidental burial by mulches, etc. These specifications shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under Mitigation Measure WR-1.

f. **Locate Staging, Parking, Spoils, and Storage Areas Away from Special-Status Plant Occurrences.** Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from any ESAs. These specifications shall be incorporated in the Drainage, Erosion, and Sedimentation Control Plan required under Mitigation Measure WR-1.

g. **Pre-Construction Seed Collection.** For all impacts to BLM sensitive plants, mitigation shall include seed collection from the affected plant population on the site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. Seed collection shall follow the guidelines described in Section C.III.3 of this condition.

h. **Monitoring and Reporting Requirements.** The Designated Botanist, or Biological Monitor under supervision of the Designated Botanist, shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities.

i. Prior to construction, California ditaxis (*Ditaxis serrata* var. *californica*) reference populations recorded in 2009 and 2010 along the gen-tie shall be revisited by the Designated Botanist to re-survey and collect specimens for identification. Specimens shall be identified to determine if the species present is California ditaxis or common ditaxis (*D. neomexicana*). A botanical expert shall be consulted, if needed, to obtain a determination.

Section B: Avoidance Requirements for BLM Sensitive Plants

The project owner shall immediately notify the CDFW, USFWS, and the BLM if any State or Federally listed species or BLM Sensitive species are detected within the project footprint, or if they would be affected by project-related hydrologic changes or changes to the local sand transport system, including downstream or downwind impacts from altered hydrology or geomorphic processes.

1. **Mitigation for CRPR Rank 1 Plants, including all BLM Sensitive Plants (Critically Imperiled).** If species with a CRPR rank of 1 are detected within the project disturbance area, complete avoidance is mandatory along the gen-tie line, fenceline, and within construction laydown areas. The project owner shall limit the width of the work area; adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads, and other construction or design modifications as necessary to achieve avoidance of any Rank 1 plants detected.

   If Rank 1 plants are detected on the solar facility, the project owner shall avoid all plants around the perimeter of the facility as necessary to achieve 75 percent avoidance of the local population of the affected species. The local population shall be measured by the number of individuals occurring on the project site and within the immediate watershed of the Project for wash dependent-species or species of unknown dispersal mechanism, or within the local sand transport corridor for wind dispersed species. Measurement of percent avoidance shall be based on population for perennials and on habitat for annuals (habitat containing the species' micro-habitat preferences, such as "fine silts and moist depressions"). Avoidance within the central portion of the solar facility is not recommended because it would create fragmented conditions that would not sustain persistence of the affected species. For all portions of the local population not avoided, the project owner shall implement off-site mitigation at a ratio of 3:1. The off-site mitigation may include land acquisition or

implementation of a restoration/enhancement program for the species, and shall meet the performance standards described in Section C of this Condition. The Applicant must demonstrate, subject to review and approval by the BLM AO that the impacts, after mitigation, will not cause a loss of viability for that species. The project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan). The content of the Plan and definitions shall be as described in subsection B.4, below.

Preservation of the Germplasm of Affected Special-Status Plants. For all impacts to BLM Sensitive plants, mitigation shall also include seed collection from the affected special status plants population on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. The seed shall be collected under the supervision or guidance of a reputable seed storage facility such as the Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden. The costs associated with the long-term storage of the seed shall be the responsibility of the project owner. Any efforts to propagate and reintroduce special-status plants from seeds in the wild shall be carried out under the direct supervision of specialists such as those listed above and as part of a Habitat Restoration/Enhancement Plan approved by the BLM AO.

2. **Mitigation for CRPR Rank 2 Plants (Imperiled).** If CRPR 2 species are detected within the project disturbance area avoidance is mandatory along the linears and construction laydown areas. The project owner shall limit the width of the work area, adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads, and other construction or design modifications as necessary to achieve avoidance of any Rank 2 plants detected. If Rank 2 plants are detected on the solar facility, the project owner shall implement off-site mitigation, at a ratio of 2:1, for any impacts exceeding 25 percent of the local population. The off-site mitigation may include land acquisition or implementation of a restoration/enhancement program for the species, and shall meet the performance standards described in section C of this Condition. The project owner must demonstrate, subject to review and approval by the BLM AO, that the impacts, after mitigation, will not cause a loss of viability for that species. The project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan). The content of the Plan and definitions shall be as described in subsection B.4, below.

3. **Mitigation for CRPR Rank 3 Plants (Vulnerable).** If CRPR 3 plants are detected (which constitutes most CNPS List 4 plants), mitigation is not required unless the occurrence has local or regional significance, in which case the plant occurrence shall be treated as a CRPR 2 plant; avoidance and mitigation would be as described above under B.2. A plant occurrence would be considered to have local or regional significance if:

   a. It occurs at the outermost periphery of its range in California;

b. It occurs in an atypical habitat, region, or elevation for the taxon that suggests that the occurrence may have genetic significance (e.g., that may increase its ability to survive future threats), or;

c. It exhibits any unusual morphology that is not clearly attributable to environmental factors that may indicate a potential new variety or subspecies.

4. **Prepare Special-Status Plant Mitigation Plan.** If the Project will impact any CRPR Rank 1 or Rank 2 plants, or Rank 3 plants of local or regional significance, or new taxa, the project owner shall prepare and implement a Special-Status Plant Mitigation Plan (Plan). Compensatory mitigation, as described in Section C of this condition, and at a mitigation ratio of 3:1 for Rank 1 plants, and 2:1 for Rank 2 plants and Rank 1 plants of local or regional significance, and new taxa. The Plan shall include, at a minimum, the following components and definitions:

   a. A description of the occurrences of the affected special-status species, ecological characteristics such as soil, hydrology, and other micro-habitat requirements, ecosystem processes required for maintenance of the species or its habitat, reproduction and dispersal mechanisms, pollinators, local distribution, a description of the extent of the population off-site, the percentage of the local population affected, and a description of how these occurrences would be impacted by the Project, including direct and indirect effects. Occurrences shall be considered impacted if they are within the project footprint, and if they would be affected by project-related hydrologic changes or changes to the local sand transport system.

   b. A description of the avoidance and minimization measures that would achieve complete avoidance of occurrences on the project linears and construction laydown areas. If avoidance is also required on the solar facility (Rank 1 species), provide a description of the measures that would be implemented to avoid or minimize impacts to occurrences on the solar facility. "Avoidance" shall include protection of the ecosystem processes essential for maintenance of the protected plant occurrence, and protection of the seed bank. Isolated "islands"' of protected plants disconnected by the Project from natural fluvial, aeolian (wind), or other processes essential for maintenance of the species, shall not be considered avoidance.

   c. If off-site mitigation is also required, pursuant to B.1–B.3 above, the Plan shall include a description of the proposed mitigation (acquisition or restoration/enhancement) and demonstrate how the mitigation will meet the performance standards described in Section C of this condition.

   For CRPR 1 plants that cannot be avoided (i.e., plants located in the central portion of the solar facility), the Plan must demonstrate that the impacts (after mitigation) will not cause a loss of viability for that species. The assessment of viability shall include: (i) current literature compilation and review on the affected species, it's documented and reported occurrences, range and distribution, habitat, and the ecological conditions needed to support it; (ii) consultation with scientists and

others with expertise and local knowledge of the species to gather unpublished data and other information to supplement the literature review findings; and (if available) (iii) information on species' habitat relationships, demographics, genetics, and risk factors.

Section C: Off-Site Compensatory Mitigation for Special Status Plants

Where compensatory mitigation is required under the terms of Section B, above, the project owner shall mitigate project impacts to special status plant occurrences as described in this section. Compensatory mitigation shall consist of acquisition of habitat supporting the target species, or restoration/enhancement of degraded habitat and populations of the target species on BLM administered land, and shall meet the performance standards for mitigation described below. In the event that no opportunities for acquisition or restoration/enhancement exist, the project owner can fund a species distribution study designed to promote the future preservation, protection or recovery of the species. Compensatory mitigation shall be at a ratio of 3:1 for Rank 1 plants, with 3 acres of habitat acquired or restored/enhanced for every acre of habitat occupied by the special status plant that will be disturbed by the project disturbance area (for example if the area occupied by the special status plant collectively measured is 1/4 acre then the compensatory mitigation will be 3/4 of an acre). The mitigation ratio for Rank 2 plants shall be 2:1. So, for the example above, the mitigation ratio would be one-half acre for the Rank 2 plants.

The project owner shall provide funding for the acquisition and/or restoration/ enhancement, initial improvement, and long-term maintenance and management of the acquired or restored lands. The actual costs to comply with this condition will vary depending on the project disturbance area, the actual costs of acquiring compensation habitat, the actual costs of initially improving the habitat, the actual costs of long-term management as determined by a Property Analysis Record (PAR) report, and other transactional costs related to the use of compensatory mitigation. The project owner shall comply with other related requirements in this condition:

I. **Compensatory Mitigation by Acquisition.** The requirements for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of special status plant compensation lands include all of the following:

    1. **Selection Criteria for Acquisition Lands.** The compensation lands selected for acquisition may include any of the following three categories:

        a. **Occupied Habitat, No Habitat Threats.** The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species, and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction).

b. **Occupied Habitat, Habitat Threats.** Occupied compensation lands characterized by habitat threats may also be acquired as long as the population could be reasonably expected to recover with habitat restoration efforts (e.g., OHV or grazing exclusion, or removal of invasive non-native plants) and is accompanied by a Habitat Enhancement/ Restoration Plan as described in Section C.II, below.

c. **Unoccupied but Adjacent.** The project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The project owner shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat. This acquisition may include habitat restoration efforts where appropriate, particularly when these restoration efforts will benefit adjacent habitat that is occupied by the target species.

2. **Review and Approval of Compensation Lands Prior to Acquisition.** The project owner shall submit a formal acquisition proposal to the BLM AO describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above, and must be approved by the BLM AO.

3. **Management Plan.** The project owner or approved third party shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The goal of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Management Plan shall be submitted for review and approval to the BLM AO.

4. **Integrating Special Status Plant Mitigation with Other Mitigation lands.** If all or any portion of the acquired Desert Tortoise, Waters of the State, or other required compensation lands meets the criteria above for special status plant compensation lands, the portion of the other species' or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation.

5. **Compensation Lands Acquisition Requirements.** The project owner shall comply with the following requirements relating to acquisition of the compensation lands after the BLM AO has approved the proposed compensation lands:

   a. **Preliminary Report.** The project owner, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the BLM AO. All documents conveying or conserving compensation lands and all

conditions of title are subject to review and approval by the BLM AO. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.

b. **Title/Conveyance.** The project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the BLM. Any transfer of a conservation easement or fee title must be to CDFW, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the BLM AO. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFW or another entity approved by the BLM AO. If an entity other than CDFW holds a conservation easement over the compensation lands, the BLM AO may require that CDFW or another entity approved by the BLM AO, in consultation with CDFW, be named a third party beneficiary of the conservation easement. The project owner shall obtain approval of the BLM AO of the terms of any transfer of fee title or conservation easement to the compensation lands.

c. **Initial Protection and Habitat Improvement.** The project owner shall fund activities that the BLM APO requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. The costs of these activities would use the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, but actual costs will vary depending on the measures that are required for the compensation lands. A non-profit organization, CDFW or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965), if it meets the approval of the BLM AO in consultation with CDFW, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFW takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFW or its designee.

d. **Property Analysis Record.** Upon identification of the compensation lands, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the BLM before it can be used to establish funding levels or management activities for the compensation lands.

e. **Long-term Maintenance and Management Funding.** The project owner shall deposit in NFWF's REAT Account a capital long-term maintenance and management fee in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands. The BLM APO, in consultation with CDFW, may designate another organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFW takes fee title to the compensation lands, CDFW shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFW and with CDFW supervision.

Interest, Principal, and Pooling of Funds. The project owner shall ensure that an agreement is in place with the long-term maintenance and management fund (endowment) holder/manager to ensure the following requirements are met:

i. **Interest.** Interest generated from the initial capital long-term maintenance and management fund shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the BLM AO and is designed to protect or improve the habitat values of the compensation lands.

ii. **Withdrawal of Principal.** The long-term maintenance and management fund principal shall not be drawn upon unless such withdrawal is deemed necessary by the BLM or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands.

iii. **Pooling Long-Term Maintenance and Management Funds.** An entity approved to hold long-term maintenance and management funds for the Project may pool those funds with similar funds that it holds from other projects for long-term maintenance and management of compensation lands for special-status plants. However, for reporting purposes, the long-term maintenance and management funds for the Project must be tracked and reported individually to the BLM AO.

f. **Other Expenses.** In addition to the costs listed above, the project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFW or

an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures.

g. **Mitigation Security.** The project owner shall provide financial assurances to the BLM AO to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing project activities. Financial assurances shall be provided to the BLM AO in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") approved by the BLM AO. The amount of the Security shall use the estimated cost per acre for desert tortoise mitigation as a best available proxy, at a ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special status plant species which is significantly impacted by the Project. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the BLM AO, the project owner shall obtain the BLM's approval of the form of the Security. The BLM AO may draw on the Security if the BLM AO determines the project owner has failed to comply with the requirements specified in this condition. The BLM AO may use money from the Security solely for implementation of the requirements of this condition. The BLM AO use of the Security to implement measures in this condition may not fully satisfy the project owner's obligations under this condition, and the project owner remains responsible for satisfying the obligations under this condition if the Security is insufficient. The unused Security shall be returned to the project owner in whole or in part upon successful completion of the associated requirements in this condition.

h. **NFWF REAT Account.** The project owner may elect to comply with the requirements in this condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF). To use this option, the project owner must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this Mitigation Measure) of implementing the requirement. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the project owner, the project owner shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands,

and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR projections are less than the amount initially transferred by the Applicant, the remaining balance shall be returned to the project owner. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the BLM AO, in consultation with CDFW and USFWS, prior to land acquisition, enhancement or management activities. Agreements to delegate land acquisition to an approved third party or to manage compensation lands, shall be executed and implemented within 18 months of the start of ground disturbance.

II. **Mitigation by Habitat Enhancement/Restoration.** As an alternative or adjunct to land acquisition for compensatory mitigation the project owner may undertake habitat enhancement or restoration for the target special status plant species on degraded BLM administered land. Habitat enhancement or restoration activities must achieve protection at a 3:1 ratio for Rank 1 plants and 2:1 for Rank 2 plants, with improvements applied to 3 acres, or 2 acres, respectively, of habitat for every acre special status plant habitat directly or indirectly disturbed by the project disturbance area (for example if the area occupied by the special status plant collectively measured is 1/4 acre than the improvements would be applied to an area equal to 3/4 of an acre at a 3:1 ratio, or one-half acre at a 2:1 ratio). Examples of suitable enhancement projects include but are not limited to the following: (i) control unauthorized vehicle use into an occurrence (or pedestrian use if clearly damaging to the species); (ii) control of invasive non-native plants that infest or pose an immediate threat to an occurrence; (iii) exclude grazing by wild burros or livestock from an occurrence; or (iv) restore lost or degraded hydrologic or geomorphic functions critical to the species by restoring previously diverted flows, removing obstructions to the wind sand transport corridor above an occurrence, or increasing groundwater availability for dependent species.

If the project owner elects to undertake a habitat enhancement project for mitigation, the Project must meet the following performance standards: The proposed enhancement project shall achieve rescue of an off-site occurrence of the same species that is currently assessed, based on the NatureServe threat ranking system with one of the following threat ranks: (a) long-term decline >30%; (b) an immediate threat that affects >30% of the population, or (c) has an overall threat impact that is High to Very High. "Rescue" would be considered successful if it achieves an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High").

If the project owner elects to undertake a habitat enhancement project for mitigation, it shall submit a Habitat Enhancement/Restoration Plan to the BLM AO

for review and approval, and shall provide sufficient funding for implementation and monitoring of the Plan. The amount of the Security shall use the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is directly or indirectly impacted by the Project. The amount of the security may be adjusted based on the actual costs of implementing the enhancement, restoration and monitoring. The implementation and monitoring of the enhancement/ restoration may be undertaken by an appropriate third party such as NFWF, subject to approval by the BLM AO. The Habitat Enhancement/Restoration Plan shall include each of the following:

1. **Goals and Objectives.** Define the goals of the restoration or enhancement project and a measurable course of action developed to achieve those goals. The objective of the proposed habitat enhancement plan shall include restoration of a target special status plant occurrence of the same species that is currently threatened with a long-term decline. The proposed enhancement plan shall achieve an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High").
2. **Historical Conditions.** Provide a description of the pre-impact or historical conditions (before the site was degraded by weeds or grazing or ORV, etc.), and the desired conditions.
3. **Site Characteristics.** Describe other site characteristics relevant to the restoration or enhancement project (e.g., composition of native and pest plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species).
4. **Ecological Factors.** Describe other important ecological factors of the species being protected, restored, or enhanced such as total population, reproduction, distribution, pollinators, etc.
5. **Methods.** Describe the restoration methods that will be used (e.g., invasive exotics control, site protection, seedling protection, propagation techniques, etc.) and the long-term maintenance required. The implementation phase of the enhancement must be completed within five years.
6. **Budget.** Provide a detailed budget and time-line, and develop clear, measurable, objective-driven annual success criteria.
7. **Monitoring.** Develop clear, measurable monitoring methods that can be used to evaluate the effectiveness of the restoration and the benefit to the affected species. The Plan shall include a minimum of five years of quarterly monitoring, and then annual monitoring for the remainder of the enhancement project, and until the performance standards for rescue of a threatened occurrence are met. At a minimum the progress reports shall include: quantitative measurements of the projects progress in meeting the enhancement project success criteria, detailed description of remedial

actions taken or proposed, and contact information for the responsible parties.

8. **Reporting Program.** The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria and include names of responsible parties.

9. **Contingency Plan.** Describe the contingency plan for failure to meet annual goals, which could include acquisition of an existing population(s).

10. **Long-term Protection.** Include proof of long-term protection for the restoration site. For private lands this would include conservations easements or other deed restrictions; projects on public lands must be contained in an ACEC or California Desert National Conservation Lands as per the CDCA as amended by the DRECP LUPA, or other protected lands (e.g. Wilderness, NPS, etc.).,

III. Contingency Measures

1. **Compensatory Mitigation by Conducting or Contributing to a Management Plan for the Affected Species.** Subject to approval of the BLM AO, as a contingency measure in the event there are no opportunities for mitigation through acquisition or restoration/enhancement to meet the obligations for off-site mitigation as described in Section B.1-3 of this condition, a Management Plan for the affected special-status plant species may be conducted or funded. The goal of the Management Plan is to devise a science-based, strategy to ensure the long-term viability of the affected species in ACECs and California Desert National Conservation Lands or other protected lands (e.g. Wilderness, NPS, etc.) in the vicinity of impact, and to determine an effective means of restoring existing populations and the habitat that supports them. The information gathered shall be used to develop conservation approaches to address the identified risk factors. These approaches include restoration needs and techniques, identifying and restoring important refugia to facilitate species dispersal in the face of climate change. The results of the study would be used to implement appropriate mitigation actions to offset residual impacts to the special-status plant(s).

   Under this contingency measure, the project owner shall acquire all available information in order to meet the requirements above for the Management Plan, which may include distribution, status and health of known occurrences, ecological requirements, and ownership and management opportunities of the affected special-status plant species known to occur in the Chuckwalla Valley. At a minimum, the study shall include the following:

a. **Occurrence and Life History Review.** The Study shall include an evaluation of all documented, historical and reported localities for the affected species, and a review of current information on the species life history. This would include a review of the CNDDB database, records from regional and

national herbaria, literature review, consultation with U.C. Riverside, San Diego Natural History Museum, and other educational institutions or natural heritage organizations in California, Arizona, and Nevada, etc.), other biotechnical survey reports from the region, and information from regional botanical experts.

b. **Conduct Site Visits to Documented and Reported Localities.** Documented and reported occurrences would be evaluated in the field during the appropriate time of the year for each late blooming species. If located, these occurrences would be evaluated for population size (area and quantity), population trend (based on available information), ecological characteristics, soils, habitat quality, potential threats, degree and immediacy of threats, ownership and management opportunities. GPS location data would also be collected during these site visits.

c. **Survey Surrounding Areas.** Areas surrounding the occurrences that contain habitat suitable to support the affected species shall be surveyed to determine the full extent of its range and distribution. If additional populations are found, collect data (GPS and assessment) on these additional populations consistent with III.2 above and submit the results to the CNDDB.

d. **Prepare Report on Status, Distribution, and Management Needs.** A report shall be prepared that contains the results of the surveys and assessment. The report shall contain the following components: (a) Range and Distribution (including maps and GPS data); (b) Abundance and Population Trends; (c) Life History; (d) Habitat Necessary for Survival; d) Factors Affecting Ability to Survive and Reproduce; (e) Degree and Immediacy of Threat; (f) Ownership and Management Opportunities for Protection or Recovery; (g) Sources of Information, and g) Conclusions. The conclusions shall contain an explanation of whether the species' survival is threatened by any of the following factors: (i) present or threatened modification or destruction of its habitat; (ii) competition; (iii) disease; (iv) other natural occurrences (such as climate change) or human-related activities. This valuable information will provide a better understanding of the ecological factors driving the distribution of these species, and will identify opportunities for mitigation and management opportunities for recovery. All data from this study will be submitted for incorporation into the CNDDB system and the study report will be made available to resource agencies, and conservation groups, and other interested parties.

e. The cost to implement or fund the study shall be no greater than the cost for acquisition, enhancement, and long-term management of compensatory mitigation lands based on the specifications and standards for acquisition or restoration/enhancement described above under C.I and C.II.

VEG-11 **Mitigation for Impacts to State Waters.** The project owner shall implement the following measures to avoid, minimize and mitigate for direct and indirect impacts

to waters of the state and to satisfy requirements of California Fish and Game Code sections 1600 and 1607.

1. **Acquire Off-Site State Waters.** The project owner shall acquire, in fee or in easement, a parcel or parcels of land that includes state jurisdictional waters per the area of state waters directly or indirectly impacted by the final project footprint. The project footprint means all lands disturbed by construction and operation of the Palen Solar Project, including all linears. The parcel or parcels comprising the ephemeral washes shall include desert dry wash woodland per the acreage of desert dry was woodland impacted by the final project footprint at a 3:1 ratio. The terms and conditions of this acquisition or easement shall be as described in Mitigation Measure WIL-4. Compensation lands for mitigation for impacts to state waters shall be located within the Chuckwalla-East Salton Sea, Hayfield, Rice, or portion of Whitewater within the NECO, Hydrologic Units (HUs) or the Palo Verde Watershed and be prioritized within the Chuckwalla HU in the Palen or adjacent watersheds.

2. **Security for Implementation of Mitigation.** The project owner shall provide financial assurances to the BLM and CDFW to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of state waters as described in this condition. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the BLM and CDFW in the form of an irrevocable letter of credit, a pledged savings account or Security prior to initiating ground-disturbing project activities. Prior to submittal to the BLM, the Security shall be approved by the BLM, in consultation with CDFW, to ensure funding. The final amount due shall be determined by updated appraisals and the PAR analysis conducted pursuant to Mitigation Measure WIL-4.

3. **Preparation of Management Plan.** The project owner shall submit to the BLM AO and CDFW a draft Management Plan that reflects site-specific enhancement measures for the drainages on the acquired compensation lands. The objective of the Management Plan shall be to enhance the wildlife value of the drainages, and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control.

4. **Code of Regulations.** The project owner shall provide a copy of this mitigation measure (Mitigation Measure VEG-11) to all contractors, subcontractors, and the Applicant's project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFW personnel upon demand. The BLM AO reserves the right to issue a stop work order or allow CDFW to issue a stop work order after giving notice to the project owner and the BLM AO if the BLM AO in consultation with CDFW, determines that the project owner has breached any of the terms or conditions or for other reasons, including but not limited to the following:

    a. The information provided by the Applicant regarding impacts to waters of the state is incomplete or inaccurate;

b. New information becomes available that was not known in preparing the terms and conditions; or

c. The Project or project activities as described in the SEIS/EIR have changed.

5. **Road Crossings at Streams.** The project owner shall preserve pre-development downstream flows and sediment transport in washes crossed by permanent roads by incorporating culverts and Arizona crossings at stream crossings. Arizona crossings are the preferred option and shall be employed wherever such crossings do not present a safety hazard and where the roadbed elevation allows the construction of such crossings. Drainages that have been graded for temporary construction access shall be restored to original contours and surface drainage patterns and shall be revegetated according to specifications in Mitigation Measure VEG-8.

6. The project owner shall maintain pre-project flow patterns (location and volume of flows) downstream of the project boundaries. Flows shall not be discharged indiscriminately as sheet flow, irrespective of the natural surface drainage patterns, but rather shall be designed to discharge into existing natural washes downstream of the Project.

7. **Best Management Practices.** The project owner shall also comply with the following conditions to protect drainages near the project disturbance area:

a. The project owner shall minimize road building, construction activities and vegetation clearing within ephemeral drainages to the extent feasible.

b. The project owner shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter ephemeral drainages or be placed in locations that may be subjected to high storm flows.

c. The project owner shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the project owner to ensure compliance.

d. Spoil sites shall be located at least 50 feet from the boundaries and drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages.

e. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering waters of the state. These materials, placed within or where they may enter a drainage, shall be removed immediately.

f. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the state.

g. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any drainage.

h. No equipment maintenance shall occur within 150 feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.

8. **Changes of Conditions.** A notifying report shall be provided to the BLM and CDFW if a change of conditions is identified. As used here, change of condition refers to the process, procedures, and methods of operation of a project; the biological and physical characteristics of a project area; or the laws or regulations pertinent to the Project as defined below. A copy of the notifying change of conditions report shall be included in the annual reports (see BRMIMP, Mitigation Measure VEG-7) or until it is deemed unnecessary BLM, in consultation with CDFW.

   a. **Biological Conditions.** A change in biological conditions includes, but is not limited to, the following: (1) the presence of biological resources within or adjacent to the project area, whether native or non-native, not previously known to occur in the area; or (2) the presence of biological resources within or adjacent to the project area, whether native or non-native, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

   b. **Physical Conditions.** A change in physical conditions includes, but is not limited to, the following: (1) a change in the morphology of a river, stream, or lake, such as the lowering of a bed or scouring of a bank, or substantial changes in stream form and configuration caused by storm events; (2) the movement of a river or stream channel to a different location; (3) a reduction of or other change in vegetation on the bed, channel, or bank of a drainage, or (4) changes to the hydrologic regime such as fluctuations in the timing or volume of water flows in a river or stream.

   c. **Legal Conditions.** A change in legal conditions includes, but is not limited to, a change in Regulations, Statutory Law, a Judicial or Court decision, or the listing of a species, the status of which has changed to endangered, rare, or threatened, as defined in section 15380 of Title 14 of the California Code of Regulations.

VEG-12 **Decommissioning and Reclamation Plan.** Upon project closure the project owner shall implement a final Decommissioning and Reclamation Plan that has been approved by the BLM AO. The Decommissioning and Reclamation Plan shall include a cost estimate for implementing the proposed decommissioning and reclamation activities, and shall be consistent with the guidelines presented for mine reclamation in BLM's 43 CFR 3809.550 et seq.

VEG-13 **Revegetation of Temporarily Disturbed Areas.** The project owner will contract a qualified Restoration Ecologist to prepare and implement a Vegetation Resources

Management Plan, to be reviewed and approved in writing by BLM, Riverside County, and the Resource Agencies prior to the initiation of any vegetation-disturbing activities. The Plan's goal will be to prevent further degradation of disturbed sites, but not necessarily to restore to pre-disturbance habitat values. The Vegetation Resources Management Plan will detail the methods for revegetation of temporarily impacted sites; and long-term management of vegetation within the solar facility during its operations. The Vegetation Resources Management Plan will be supplemented prior to decommissioning to provide a framework for vegetation management and post-decommissioning restoration/reclamation. The Vegetation Resources Management Plan will include the following components:

1. **Reclamation, revegetation, or restoration of temporarily impacted sites.** Temporary project disturbances to soils and vegetation (e.g., staging areas, materials and equipment, lay-down areas, temporary work areas and access routes along the gen-tie line) are not expected to recover from disturbance for many years, and therefore are mitigated by compensation and other measures. In order to avoid further degradation of these sites, the project owner will prepare and implement a plan to revegetate the sites. The objectives will be to prevent or minimize further site degradation; stabilize soils; maximize the likelihood of vegetation recovery over time; and minimize soil erosion, dust generation, and weed invasions. The nature of site reclamation, revegetation, or restoration at each site will differ according to its pre-disturbance condition and the nature of the construction disturbance (e.g., drive and crush vs. blading).

2. **Implementation:** The Plan will include at minimum: (a) soil preparation measures, including locations of recontouring, decompacting, imprinting, or other treatments; (b) details for topsoil storage, as applicable; (c) plant material collection and acquisition guidelines, including guidelines for salvaging, storing, and handling plants from the project site, as well as obtaining replacement plants from outside the project area; (d) a plan view drawing or schematic depicting the temporary disturbance areas (drawing of "typical" gen-tie structure sites will be appropriate); (e) time of year that the planting or seeding will occur and the methodology of the planting; (f) a description of the irrigation, if used; (g) a statement that the Integrated Weed Management Plan (MM VEG-9) will be implemented, or alternate measures to control invasive weeds undertaken, as appropriate to site conditions; (h) quantitative success criteria; and (i) a detailed monitoring program to measure the success criteria, commensurate with the Plan goals. This Plan will also contain contingency measures for failed revegetation or restoration efforts (efforts not meeting success criteria).

3. **Seed and Nursery Stock.** Only seed or potted nursery stock of locally occurring native species from a genetically appropriate source will be used for revegetation. Seeding and planting will be conducted as described in Chapter 5 of *Rehabilitation of Disturbed Lands in California* (Newton and Claassen, 2003), or more recent proven methods. The list of plants observed during botanical surveys of the project area will be used as a guide to site-specific plant selection for revegetation.

4. **Monitoring Requirement and Success Criteria.** The Plan will include objective, quantifiable success criteria, commensurate with the goals of the Plan. Monitoring of the reclamation, revegetation, or restoration sites will continue annually for 3 years or until the defined success criteria are achieved, whichever is later. The project owner will be responsible for implementing remediation measures as needed. Following remediation work, the site will be subject to the success criteria and monitoring period as required for the initial reclamation, revegetation, or restoration. If, after a period of five years the restoration has not met the success criteria, then the project owner shall confer with CDFW and the BLM on another method to meet the compensation goals, including, but not limited to, acquisition of state waters.

5. **Cactus Salvage.** The project owner will include salvaged or yuccas (all species), and cacti in revegetation plans and implementation affecting BLM lands. The Plan will include methods to salvage and replant cacti, yucca, or other native species found on the site, prior to disturbance. It will include descriptions of pre-project field surveys to locate and identify specimens suitable for salvage; season for salvaging the plants; methods for salvage, storage, and re-planting them; locations for re-planting; and appropriate monitoring and success criteria for the salvage work. To the extent feasible, cholla species may be transported to revegetation sites as vertical mulch. Any vegetation to be salvaged and removed from the site (such as cactus or yucca) will be subject to sale to the project owner at appraised value, according to CFR 43:5420. Therefore, prior to the issuance of a Notice to Proceed, the Project owner will prepare an inventory of all native cacti and yucca species to be removed from the site, including shapefile locations. If material is moved to another BLM site, then BLM retains ownership of the material. No appraisal or sale will be required.

5. **Operations Phase On-Site Vegetation Management:** The Plan will include methods and scheduling for on-site vegetation management throughout the operations phase, describing mowing or other vegetation treatments to be implemented, disposal of mown material, and incorporating all applicable components of the Weed Management Plan, including any proposed herbicide usage.

6. **Decommissioning Phase Plan Supplement.** Prior to closing and decommissioning the Project, the project owner will contract a qualified Restoration Ecologist to prepare a supplement to the Vegetation Resources Management Plan, to describe all proposed vegetation management activities, and to be consistent with the site's proposed reuse. The supplement will describe any proposed reclamation, revegetation, or restoration of the site, to be consistent with Section 1 of this measure, above, as well as weed management and post-decommissioning monitoring requirements and success criteria.

7. **Reporting.** Within 90 days after completion of each year of project construction, the project owner will provide to the BLM and Riverside County verification of the total vegetation acreage subject to temporary and permanent disturbance and a written report identifying which items of the Vegetation

Resources Management Plan have been completed, a summary of all modifications to mitigation measures made during the Project's construction and decommissioning phases, and which items are still outstanding. The annual reports will also include a summary of the reclamation, revegetation, or restoration activities for the year, a discussion of whether performance standards for the year were met, any remedial actions conducted and recommendations for remedial action, if warranted, that are planned for the upcoming year.

VEG-14 **Groundwater-dependent Vegetation Monitoring.** The project owner shall prepare a Groundwater-Dependent Vegetation Monitoring Plan for monitoring the project effects of groundwater pumping on groundwater dependent vegetation. The monitoring shall encompass an appropriate area to detect project-related effects, as determined by consultation with an expert in the field of groundwater and concurrence by BLM. The vegetation and groundwater data collected as part of the Plan shall be used to determine if remedial action is required, as described in VEG-15.

The project owner may forgo development of a Groundwater Dependent Vegetation Monitoring Plan, or may cease implementation of such a plan, by providing evidence to the BLM AO that the source of water for the groundwater-dependent ecosystems (GDEs) is a shallow perched water-bearing zone rather than the regional groundwater system and that the shallow perched water-bearing zone is unrelated and not influenced by the regional groundwater system that the Project owner proposes to use for water.

The Project owner shall develop and implement a Groundwater-Dependent Vegetation Monitoring Plan (Plan) that meets the performance standards described below and includes the following components:

1. Monitoring Objectives and Performance Standards. The objectives of the Plan shall be to monitor the Project effects of groundwater pumping on vegetation and GDEs and, in conjunction with the remedial action described in VEG-15, to ensure that the Project groundwater pumping has a less than significant effect on biological resources. Monitoring shall be conducted at a level of detail adequate for detecting adverse effects, as reflected in vegetation attributes and groundwater levels in the shallow (alluvial) aquifer. The baseline for groundwater levels shall be the lowest baseline water level as measured at the Project site prior to the start of groundwater pumping.
2. Location of Monitoring Plots. The monitoring plots shall be established within an appropriate area to detect project-related effects, as determined by consultation with an expert in the field of groundwater and concurrence by BLM. The majority of the plots shall be in the area north and east of the Project site, where GDEs and the intersection of the ground surface and shallow groundwater are located, in the topographic lows in the valley.
3. Monitoring Plots and Controls. Because of the variation in vegetation types and depth to groundwater within the predicted groundwater drawdown zone,

the study design shall treat the monitoring plot with a corresponding control plot as a pair (versus comparing the mean of all treatment plots to the mean of all control plots). The "control" plots shall consist of the data collected at the same plot during the baseline (pre-disturbance) monitoring for a pre-disturbance vs. post-disturbance comparison. Appropriate statistical methods shall be used to analyze the differences between the control and monitoring plots (for example, a one-tailed paired-sample statistical test.

4. Off-Site Reference Plots: Off-site monitoring plots shall be established as reference sites to distinguish changes in plant vigor seen at the site from the effects of a region-wide drought. The off-site reference plots can be located within Chuckwalla Valley but shall be within areas that would not be affected hydrologically by groundwater pumping for the project or other projects or agricultural operations. Off-site monitoring reference plots shall be located in the same general hydrologic and geologic setting (i.e., playa margins), in the same climatic region (Sonoran Desert region of California), and contain the same natural communities or vegetation alliances as those to which they are being compared. Impacts from pests and diseases, if present, must also be considered and excluded or adjusted for as part of the analysis. Data on climate and surface runoff in the study area shall be collected to identify "drought" conditions and correlate groundwater changes and weather changes.

5. Sample Size and Design. The number of monitoring sites shall be established using appropriate statistical methods (for example, by a "priori power analysis") and shall be sufficient to achieve adequate (90 percent) statistical power. Following collection of the baseline data a statistical analysis shall be conducted to refine the power analysis and evaluate the adequacy of the sampling design. If the analysis of baseline data indicates that the sampling design is insufficient to achieve adequate statistical power, the design shall be modified (for example, by adding additional monitoring sites).

6. Water Table Monitoring. The Project owner shall install piezometers at each of the dominant vegetation community types within or near the monitoring plots. The number, location, depth and monitoring frequency of the piezometers shall be sufficient to establish the effect of project groundwater pumping on the shallow aquifer water levels. At a minimum, each piezometer shall be monitored twice per year, in early spring (March) and post-monsoon (September). The piezometers shall be designed to monitor the maximum expected fluctuation in the water table and to last the duration of the project. Data collected from the project wells and piezometers for Mitigation Measure WR-3 (Groundwater Level Monitoring, Mitigation, and Reporting) shall be used to refine the modeling of the predicted groundwater drawdown and zone of influence after two years of data collection following the start of groundwater production. The project owner shall submit to the BLM, for review and approval, a report on the results of the refined modeling. The report shall include all calculations and assumptions made in development of report data and interpretations, and all well monitoring data and piezometer data collected and used in the calculations. If the results indicate that the drawdown and zone

of influence is greater than the effect predicted in the Groundwater Resources Investigation, and the GDE are found to be drawing groundwater that is hydraulically connected to the regional groundwater system, then the project owner will submit a revised monitoring plan for GDE areas outside of the original monitoring area.

7. Soil Monitoring. Soil salinity and pH shall be monitored annually at every monitoring plot. The Plan shall describe the monitoring devices and techniques used to collect and interpret this data, relative to ecosystem function. One soil core sample per community type shall be collected as part of the baseline data to establish the approximate rooting depth of the phreatophytes, and thereafter shall be repeated every five years. The coring method must provide a continuous core that will provide visual examination of roots and root nodules, soil profile, and soil moisture.

8. Baseline and Long-term Data Collection. At a minimum, baseline data shall be collected at all monitoring sites prior to the start of pumping; however, vegetation data collected from sites farther from the nearest wells will allow for the collection of multiple years of "pre-disturbance" data. It appears that the effects of pumping would not reach the areas supporting the GDEs or phreatophytic plants for several years. Wells located in very close proximity to known phreatophytes in the northeast portion of the project shall not be used until an adequate baseline is obtained. Subject to approval by the BLM, if groundwater pumping ceases or is replaced by other water sources, groundwater and vegetation monitoring shall continue for a period of 5 years or until refined modeling indicates that the groundwater levels have returned to baseline levels and the decline in plant vigor has been restored to pre-disturbance conditions.

9. Target Vegetation Population. The monitoring sites shall include GDEs and other vegetation potentially affected by the drawdown that occur within the zone of influence. The following phreatophytes have been documented to occur around Palen Lake: honey mesquite (*Prosopis glandulosa*); iodine bush (*Allenrolfea occidentalis*), bush seep-weed (*Suaeda moquinii*), jackass clover (*Wislizenia refracta*), four-wing saltbush (*Atriplex canescens*), allscale (*A. polycarpa*), spinescale (*A. spinifera*), Salton saltbush (Palen Lake saltbush, see Table 3.17-3), ironwood (*Olneya tesota*), palo verde (*Cercidium microphyllum*), cat's claw (*Acacia greggii*), and smoke tree (*Psorothamnus spinosus*). The final number of each community type sample needed shall be based on the *priori* power test conducted after the first year of baseline data collection (http://rgs.usu.edu/irb/wp-content/uploads/sites/12/2015/08/A_Researchers_Guide_to_Power_Analysis_USU.pdf).

10. Fine-Scale Vegetation Mapping. Within the monitoring sites vegetation shall be mapped to the alliance level, consistent with classification protocol in the Manual of California, 2nd edition (Sawyer et al., 2009) but any important associations shall also be mapped. Mapping shall be done using minimum 1 meter resolution color orthophotos or higher resolution infrared imagery. The mapping shall also be used to determine the acreages of GDEs and establish the

amount of security to be deposited in the event that adverse effects are detected during the monitoring. Boundaries of the permanent plots and any off-site reference sites shall be recorded using GPS technology and depicted on the geo-referenced aerials. GIS shapefiles and metadata shall be submitted along with the draft Plan and any subsequent revisions to the Plan (i.e., following the collection of baseline data and subsequent power analysis).

11. Guidelines for the Monitoring Plan. The Groundwater-Dependent Vegetation Monitoring Plan (Plan) shall be prepared with guidance from Measuring and Monitoring Plant Populations (Elzinga et al., 1998). The Plan shall provide a detailed description of each of the following components:

    a. Sampling Design. The sampling design shall include a description of: (a) the populations (vegetation types) sampled; (b) number, size, and shape of the sampling units; (c) layout of the sampling units; (d) methods for permanently marking plots in the field; (e) monitoring schedule/frequency; (f) vegetation and other attributes sampled; and (g) sampling objectives (target/threshold, change/trend-based) for each attribute.

    b. Habitat Function and Values. The Plan shall describe the hydrologic, geologic/geomorphic, geochemical, biological and ecological characteristics of the GDEs, and shall also describe whether species are obligate or facultative; root growth and water acquisition characteristics; morphological adaptations to the desert environment; reproduction and germination characteristics; general and micro-habitat preferences; obligate or facultative halophytes and phreatophytes; role in the morphology of dunes; and importance to wildlife, etc.

    c. Field techniques for measuring vegetation. This will include the vegetation (or other) attributes selected based on a demonstrated knowledge of the biology and morphology of the species, and include a discussion of the limitations involved in each measurement. Examples of appropriate field techniques for measuring drought response include: percent dieback; live crown density; crown height and width, percent cover of live (versus dead or residual) vegetation, percent cover/frequency of associated species; percent composition of native versus non-native species; and percent cover based on wetland status codes (OBL, FACW, FAC, FACU, UPL) and status as phreatophytes or halophytes. Photo monitoring shall not be considered an acceptable monitoring method but may be useful to conduct periodically (e.g., every 3 to 5 years).

    d. Data Management. Including how the data will be recorded in the field (e.g., using a GPS data dictionary), processed and stored.

    e. Training of personnel. Describe minimum standards for training and monitoring personnel.

    f. Statistical analysis. Describe statistical methods used to analyze the monitoring data (incorporating the minimum standards for statistical power and error rate described above).

12. Peer Review of the Plan. The draft Plan shall undergo a peer review by recognized experts, which shall include one or more scientists with expertise in: the preparation of monitoring plans for plant populations; the physiological responses of desert phreatophytes to drought stress; assessing the effects of groundwater withdrawal on vegetation in the desert region; and biostatistics. The Project owner shall provide the resumes of suggested peer reviewers to the BLM for review and approval.

13. Annual Monitoring Report. Annual Monitoring Reports shall be submitted to the BLM and shall include, at a minimum: (a) names and contact information for the responsible parties and monitoring personnel; (b) summaries of the results of the monitoring as required in Mitigation Measure WR-3 (Groundwater Level Monitoring, Mitigation, and Reporting); (c) piezometer monitoring results, and a comparison of predicted versus actual water table declines; (d) summary of the results of vegetation, groundwater, and soil monitoring data compared to the baseline data for each plot (pre- versus post-disturbance comparison); (e) description of sampling and monitoring techniques used for each attribute; (f) description of the data management and statistical analysis; (g) photos; (h) conclusions and recommendations for remedial action, if the monitoring data indicates that the threshold described below has been met. The first Annual Monitoring Report shall include an appropriate statistical analysis using the first year baseline monitoring data to assess whether the sampling design was adequate to provide statistically meaningful data, as described above. If warranted, the first year Annual Monitoring Report shall include recommendations for revisions to the Plan based on this analysis.

14. Threshold for Remedial Action: The Project owner shall implement remedial action, as described in Mitigation Measure VEG-15, if the monitoring described in VEG-14 detects a decline in plant vigor of 20 percent or more compared to the same plots pre-disturbance AND also detects a decline in the alluvial (shallow) aquifer confirmed by two consecutive annual water monitoring events in any amount greater than the lowest baseline water level as measured prior to groundwater pumping. If regional drought, off-site pumping or other activities unrelated to the project are also contributing to the decline in water table, the project owner shall be responsible only for the portion of the effect that can be statistically demonstrated to be the result of project pumping. To determine whether declines in plant vigor are related to project pumping as opposed to region-wide drought or offsite pumping conditions the project owner shall install a network of background monitoring piezometers and incorporate these data in the assessment of Project-related effects on GDEs.

15. To understand the source of the water for the GDEs, the Project owner shall prepare a groundwater investigation work plan for submittal to the BLM that will outline steps to determine if the source of water for the GDEs is a shallow perched water-bearing zone rather than the regional groundwater system, and that the shallow perched water-bearing zone is not hydraulically connected to the regional groundwater system. The groundwater investigation will be comprised of the following components:

a. A continuous soil coring program at five locations to be identified based on field mapping of GDEs in the sampling area. One of the five borings will be drilled adjacent to a GDE containing mesquite, and the other four located to provide an assessment of the range of plant communities within GDEs in the area of interest (i.e., to assess the variability of GDE plant type water requirements and root zone depth).

b. The soil cores shall extend a minimum of 20 feet below the deepest root zones of the GDEs investigated to demonstrate separation between the shallow and regional water zones. At a minimum the soil cores shall show that 20 feet of unsaturated conditions are present below the deepest root zones of the plant communities investigated. The soil cores will be logged by a professional geologist in the State of California, and the coring program will be overseen by a qualified biologist with experienced in the plant communities identified within each GDE.

c. A sampling plan for selective analysis of soil moisture content and saturation will also be conducted for each soil core advanced adjacent to a GDE. The number and frequency of soil samples shall be established to confirm field observations of soil moisture content in the shallow water-bearing zone, through the root zone and in the deeper sediments below the root zone above the regional water table. Soil samples shall be analyzed for moisture content after ASTM Method D2216.

d. Depending on the results of the soil coring program, piezometers may be installed as monitoring points for the regional water table and to monitor changes in the shallow water-bearing zone from Project pumping. In the report of results from the soil coring program, a water-level monitoring program shall be proposed if it is shown that the regional water table is in direct hydraulic connection to the source of water to the GDE's. If the field data clearly shows an unsaturated zone of 20 feet or more below the deepest root zones of the GDEs, then piezometers will not be installed.

If the results of the pre-construction field observations and soil sampling demonstrate 20 feet or more of unsaturated sediments between the deepest root zones of the GDEs and the regional water table, there will be no requirements to implement any of the underlying conditions as provided for in VEG-14 and VEG-15, as sufficient evidence will have been provided to demonstrate that the groundwater is not the source for the GDE's.

If the refined modeling of the predicted groundwater drawdown and zone of influence after two years of data collection (following the start of groundwater production), as described in Subsection 6 of this measure and in Mitigation Measure WR-3 (Groundwater Level Monitoring, Mitigation, and Reporting), indicates the drawdown or zone of influence would be greater than predicted in the Project owner's Groundwater Resources Investigation (GRI), and the GDE are found to be drawing groundwater that is hydraulically connected to the regional groundwater

system, then the project owner will submit a revised monitoring plan for GDE areas outside of the original monitoring area.

VEG-15 **Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources.** If monitoring detects project-related adverse impacts to groundwater dependent ecosystems (GDEs), as described in VEG-14 and the impacts are shown to be the result of a decline in the regional groundwater table due to project pumping, the project owner shall determine which well(s) are the source of the adverse impacts and shall implement remedial measures as outlined below. If regional drought, off-site pumping, or other activities unrelated to the project are also contributing to the decline in water table, the project owner shall be responsible only for the portion of the effect that can be demonstrated to be the result of project pumping. The remedial measures shall be implemented with the objective of restoring the groundwater levels to the baseline described in VEG-14, and shall compensate for impacts to GDEs with off-site habitat acquisition or restoration. The project owner shall do all of the following:

1. Modification and/or Cessation of Pumping: The project owner shall provide to the BLM AO evidence based on groundwater monitoring and modeling indicating which wells are likely to be causing adverse impacts to GDEs. The project owner shall initially modify operation of those wells to reduce the offsite drawdown in the areas of the GDEs.

2. Remedial Action Plan: The objective of remedial action shall be restoration of the spring groundwater table in the alluvial (shallow) aquifer to baseline levels, as described in VEG-14. The Remedial Action Plan shall include one or more of the following measures: (1) Begin rotational operation of the site water supply wells reducing pumping in wells that are the most proximal to the GDEs, (2) reducing the pumping rate in the wells that have been identified as the cause of the drawdown in the area of the GDEs, (3) focus pumping on wells on the southern portion of the project site away from the GDEs, (4) cease operation of the well(s) that are the cause of the drawdown. Groundwater water level monitoring shall increase to a frequency necessary to document change and recovery in the drawdown from the changes in the pumping program. The Remedial Action Plan shall include a water level monitoring program of sufficient frequency to document changes in operation of the water supply wells, and demonstrate that the water table has been restored to baseline levels.

3. The project owner shall use the following guidelines for determining if an ecosystem (or species) is phreatophytic:

   a. It is not known or documented to depend on groundwater, based on scientific literature or expert opinion (local knowledge can be useful in making a determination as some species' dependence varies by setting);

   b. The species are not known to have roots extending over a meter in depth;

   c. The community does not occur in an area where the water table is known to be "near"' the surface (relative to the documented rooting depths of the species);

d. The herbaceous or shrub vegetation is not still green and/or does not have a high leaf area late in the dry season (compared to other dry areas in the same watershed that do not have access to groundwater).

4. Compensate for Loss of Ecosystem Function. If the decline in the water table in the alluvial (shallow) aquifer is accompanied by a corresponding decline in plant vigor greater than 20 percent (as described in VEG-14), the project owner shall compensate for the loss of habitat functions and values in the affected groundwater-dependent ecosystems. The amount of compensation shall be at a 3:1 ratio based on area of affected area, using mapping as described in VEG-14. The Project owner shall acquire, in fee or in easement, a parcel or parcels of land that include an amount of groundwater-dependent vegetation that is of the same habitat-type as the community affected (e.g., mesquite woodland, alkali sink scrubs, or microphyll woodland) and of an equal or greater habitat quality. The compensation lands shall be located within the watersheds encompassing the Chuckwalla or Palen valleys. As an alternative to habitat compensation, the project owner may submit a plan that achieves restoration of lost habitat function and value at another location within the Chuckwalla Groundwater Basin that contains the same habitats as those affected.

   a. Review and Approval of Compensation Lands Prior to Acquisition or Restoration. The project owner shall submit a formal acquisition proposal to the BLM AO describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands in relation to the criteria listed above. Approval from the BLM AO shall be required for acquisition of all compensatory mitigation parcels.

   b. Preparation of Management Plan: The Project owner shall submit to the BLM AO and CDFW a draft Management Plan that reflects site-specific enhancement measures for the acquired compensation lands. The objective of the Management Plan shall be to maintain the functions and values of the acquired GDE plant communities and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control.

   c. Delegation of Acquisition. The responsibility for acquisition of compensation lands may be delegated to NFWF or another third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the BLM. Such delegation shall be subject to approval by the BLM AO prior to land acquisition, enhancement or management activities.

4.17.5 Residual Effects after Implementation of Mitigation Measures

With the implementation of mitigation measures identified in this section, residual impacts to vegetation resources would be (1) the net loss or degradation of vegetation and habitat on the project site, including special-status dry wash woodland and sand dune communities; (2) interruption of sand transport across the site; (3) the indirect effects of dust, invasive plants, and other disturbance

to off-site vegetation; (4) the net loss of special status plant occurrences on the site; and (5) the net loss of jurisdictional waters of the State on the site and downstream. These impacts are described above, under direct and indirect impacts of the Proposed Action.

4.17.6 Unavoidable Adverse Impacts

Under the technology proposed in the three build alternatives (i.e., the Proposed Action, Alternatives 1 and 2), natural vegetation communities and special status plants not otherwise avoided under proposed mitigating measures would be lost from the project site.

Unquantified indirect losses or degradation to these communities would occur adjacent to the project site. Despite mitigating measures, the chance of invasion and spread of weeds and the chance of human-caused wildfires would persist in the areas surrounding the Project, threatening the surrounding vegetation and special status plant species. Impacts to the sand transport system and active sand dunes on and off the project site would be substantial. If available and feasible, compensatory mitigation by purchasing and protecting off-site habitat, or by enhancing or restoring off-site habitat, could offset the loss of sand dunes by acquisition and preservation, but could not remedy the interference of the Proposed Action with a natural geomorphic process that sustains the region's sand dunes.

4.17.7 CEQA Significance Thresholds and Determinations

Significance criteria are used to characterize the nature of potential impacts and determine the significance of such impacts under CEQA. Significance criteria presented in Appendix G of the CEQA Guidelines are often used for this purpose. The following list includes the CEQA Guidelines Appendix G criteria relevant to vegetation resources and applicable to the Project. Any significance criteria that are not applicable to the Proposed Action or an alternative to the Project are identified following this list; only those criteria applicable to the Project or an alternative are used in the impact analysis.

VEG-1 Have a substantial adverse direct or indirect effect on any candidate, sensitive, or special-status species identified by local, state, or federal agencies.

VEG-2 Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified by local, state, or federal agencies.

VEG-3 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state conservation plan.

Two of the vegetation-related significance criteria identified in CEQA Guidelines Appendix G are not applicable for the Project: (1) there are no federally protected wetlands as defined by Section 404 of the Clean Water Act on the site, or that would be affected by the Project (biological resources criterion c), and (2) the Proposed Action would not conflict with any applicable local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (biological resources criterion e). The Appendix G Guideline regarding wildlife corridors and nursery sites is addressed in Section 4.21 (Wildlife Resources).

A project may result in a significant adverse cumulative impact where its effects are "cumulatively considerable." Cumulatively considerable means that the incremental effects of an individual

project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

The following analyses for the Proposed Action and alternatives addresses potential impacts, including cumulative impacts, under Significance Criteria VEG-1 through VEG-3.

VEG-1: Candidate, Sensitive, or Special-Status Species

The results of surveys conducted between 2009 and 2017 indicate that the Proposed Action and the Reduced Footprint Alternative and Avoidance Alternative could impact several special status plant species. See Section 3.17 (Vegetation Resources) and Table 3.17-3 for a discussion of each special status plant species that is present or potentially present on or near the project site.

Direct impacts to special status plants may include destruction of individual plants, disruption of soil seed banks, and loss or degradation of habitat. If any special status plant species described in Section 4.17.2 occur within the project site, direct impacts would be significant only if a large portion of the local population, or habitat, is affected.

Indirect impacts to special status plants may include introduction and spread of invasive plants; alteration of surface hydrology and sand transport processes; population fragmentation and disruption of gene flow; potential impacts to pollinators; increased risk of fire; erosion and sedimentation of disturbed soils which render the habitat vulnerable to invasion by non-native invasive plants; disturbance of the structure and ecological functioning of biological soil crusts which affects seed germination, reduces soil nutrition and carbon sequestration, and renders the soil vulnerable to water and wind erosion (Belnap and Eldridge, 2001); herbicide and other chemical drift; and disruption of photosynthesis and other metabolic processes from fugitive dust during construction and operation of the project.

See Section 4.17.2 for a full discussion of direct and indirect impacts to special status plant species.

Under the Proposed Action and Alternatives 1 and 2, the direct and indirect impacts of project construction, O&M, and decommissioning to special-status plant taxa (if present), as described in Section 4.17.2, could be significant under Criterion VEG-1 (impacts to special status plants).

Mitigation measures including avoidance, minimization, and compensation are required to offset direct and indirect impacts to special status plants. These mitigation measures are presented in Section 4.17.4. Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs (Section 2.2.7, Chapter 2). Table 4.17-4 explains how these measures reduce project effects, and how they relate to mitigation measures.

Potential direct impacts, if any, would be mitigated through implementation of Mitigation Measure VEG-10 (Special-status Plant Avoidance and Minimization Measures).

Indirect impacts would be mitigated through implementation of measures regarding biological monitoring, worker training, avoidance and minimization measures, weed management, and compensation. The following mitigation measures are recommended for effects on special status species; the full text is presented in Section 4.17.4.

- VEG-1 through VEG-5 (Biological Monitoring) require qualified biologists, with authority to implement mitigation measures necessary to prevent impacts to biological resources, to be on site during all construction activities.
- VEG-6 (Worker Environmental Awareness Program) requires training workers to avoid impacts to sensitive biological resources.
- VEG-7 (Biological Resources Mitigation Implementation and Monitoring Plan) requires a plan that incorporates the mitigation and compliance measures required by local, state, and federal agencies regarding biological resources.
- VEG-8 (Impact Avoidance and Minimization Measures) describes Best Management Practices and other impact avoidance and minimization measures.
- VEG-9 (Weed Management Plan) requires management actions to monitor and eradicate specified non-native, noxious, or invasive weed species and APM-4 requires measures to avoid and minimize the introduction and spread of invasive weeds.
- VEG-10 (Special Status Plant Impact Avoidance and Minimization) provides Best Management Practices to avoid indirect impacts to special status plants. Measures WIL-10 (Sand Dune Community/Mojave Fringe-toed Lizard Mitigation).
- VEG-11 (Mitigation for Impacts to State Waters) would require compensatory mitigation for impacts to dunes and washes (habitat for many special status plants).
- VEG-13 (Revegetation of Temporarily Disturbed Areas) would reduce the indirect effects of dust, invasive weeds, and soil erosion by establishing native plant cover on temporarily disturbed sites within the project area.

With implementation of the mitigation measures and APMs listed above, direct and indirect impacts to special status plants would be mitigated to less than significant levels by minimizing vegetation impacts to the extent practicable; avoiding special status plant occurrences; controlling invasive weeds and preventing infestations by newly introduced weeds; and providing for long-term conservation and management of native vegetation and natural communities on compensation lands.

With the mitigation measures identified above, impacts under Criterion VEG-1 would be less than significant for the Proposed Action and Alternatives 1 and 2 and the Project would not contribute considerably to cumulative impacts.

VEG-2: Riparian Habitat or Sensitive Natural Community

Sensitive natural communities within the project site are desert dry wash woodland, unvegetated ephemeral dry wash, and stabilized and partially stabilized desert dunes. See Section 3.17 (Vegetation Resources) and Table 3.17-2 for a discussion of each sensitive natural community that is present on the project site. Groundwater-dependent vegetation communities in the project vicinity are also considered sensitive and are described in Section 3.17.

Grading within the project site and its ephemeral drainages would cause a direct impact on sensitive natural communities and would eliminate or impair the hydrological, biogeochemical, vegetation, and wildlife functions of these drainages.

In addition to direct impacts from the Proposed Action and alternatives, desert washes downstream from the project site also would be subject to an indirect impact as a result of changes to upstream hydrology, with downstream vegetation in washes potentially deprived of flows or receiving lower or higher volumes and velocities of water than current conditions. Indirect impacts to stabilized and partially stabilized dunes include disruption of the sand transport corridor resulting in downwind impacts to sand dune habitat; introduction and spread of invasive plants; erosion and sedimentation of disturbed soils; and fragmentation and degradation of habitat. Groundwater pumping may have indirect effects on groundwater-dependent vegetation communities.

See Section 4.17.2 for a full discussion of direct and indirect impacts to sensitive natural communities. Under the Proposed Action and Alternatives 1 and 2, the direct and indirect impacts of project construction, O&M, and decommissioning to riparian habitat or sensitive natural communities, as described in Section 4.17.2, could be significant under Criterion VEG-2 (impacts to sensitive natural communities).

Mitigation measures including avoidance, minimization, and compensation are required to offset direct and indirect impacts to sensitive natural communities. These mitigation measures are presented in Section 4.17.4. Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs (Section 2.2.7, Chapter 2). Table 4.17-4 explains how these measures reduce project effects, and how they relate to mitigation measures.

Direct impacts would be mitigated through implementation of Mitigation Measure VEG-11 (Mitigation for Impacts to State Waters) and WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation). VEG-11 specifies avoidance and mitigation for impacts to ephemeral drainages within and downslope of the project site. This measure also specifies compensation for permanent impacts at a 1:1 ratio for unvegetated ephemeral dry wash and at a 3:1 ratio for desert dry wash woodland. WIL-10 would require compensatory mitigation for impacts to sand habitats. In addition, implementation of APM-8 would reduce the potential for site disturbance and vegetation removal during construction by using state of the art construction and installation techniques to be approved by BLM.

Indirect impacts would be mitigated through implementation of measures regarding biological monitoring, worker training, avoidance and minimization measures, weed management, and compensation.

- VEG-1 through VEG-5 (Biological Monitoring) require qualified biologists, with authority to implement mitigation measures necessary to prevent impacts to biological resources, to be on site during all construction activities.
- VEG-6 (Worker Environmental Awareness Program) requires training workers to avoid impacts to sensitive biological resources.
- VEG-7 (Biological Resources Mitigation Implementation and Monitoring Plan) requires a plan that incorporates the mitigation and compliance measures required by local, state, and federal agencies regarding biological resources.
- VEG-8 (Impact Avoidance and Minimization Measures) describes Best Management Practices and other impact avoidance and minimization measures.

- VEG-9 (Weed Management Plan) requires management actions to monitor and eradicate specified non-native, noxious, or invasive weed species and APM-4 requires measures to avoid and minimize the introduction and spread of invasive weeds.
- WIL-4 (Desert Tortoise Compensatory Mitigation) would require compensation for loss of special status wildlife habitat.
- VEG-13 (Revegetation of Temporarily Disturbed Areas) would reduce the indirect effects of dust, invasive weeds, and soil erosion by establishing native plant cover on temporarily disturbed sites within the project area.
- WIL-10 (Sand Dune Community/Mojave Fringe-toed Lizard Mitigation) and VEG-11 (Mitigation for Impacts to State Waters) would require compensatory mitigation for impacts to dunes and washes.

With implementation of mitigation measures and APMs listed above, impacts to ephemeral dry wash and desert dry wash woodland under Criterion VEG-2 would be less than significant and the Project would not contribute considerably to cumulative impacts.

While the impacts to sand habitats and sand transport for the Proposed Action and Alternative 1 would be mitigated to the extent feasible, it is uncertain whether sufficient private lands meeting the habitat criteria would be available for purchase or whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values. Therefore, the Proposed Action and Alternative 1 may have significant and unmitigable direct and indirect effects on aeolian sand habitat and sand transport. In addition, the Proposed Action and Alternative 1 may have a considerable contribution to the significant cumulative loss of aeolian sand habitat and sand transport. Alternative 2, the Avoidance Alternative, would avoid significant impacts to aeolian sand habitat and sand transport through design setbacks; thus, Alternative 2 would not have significant direct or indirect impacts to these resources, and would not contribute to significant cumulative impacts.

With implementation of Mitigation Measures VEG-14 (Groundwater-dependent Vegetation Monitoring) and VEG-15 (Remedial Action and Compensation for Adverse Effects to Groundwater-dependent Biological Resources) and APM-37 (water conservation measures), groundwater-related impacts of the Proposed Action or Alternatives 1 or 2 to groundwater-dependent vegetation would be mitigated to less than significant levels by development and implementation of a Groundwater Monitoring and Mitigation Plan, including water conservation measures, and implementation of remedial measures if project-related adverse impacts are detected.

With implementation of the mitigation measures identified above, impacts to riparian habitat or other sensitive natural communities under Criterion VEG-2 would be less than significant for the Proposed Action or Alternative 1 for desert dry wash woodland, unvegetated ephemeral dry wash, and groundwater-dependent vegetation and the Proposed Action or Alternative 1 would not contribute considerably to cumulative impacts. For stabilized and partially stabilized desert dunes, the Proposed Action and Alternative 1 may have significant and unmitigable direct and indirect effects on aeolian sand habitat and sand transport and may have a considerable contribution to the significant cumulative loss of aeolian sand habitat and sand transport.

With implementation of the mitigation measures identified above, impacts to riparian habitat or other sensitive natural communities (desert dry wash woodland, unvegetated ephemeral dry wash, groundwater-dependent vegetation, and stabilized and partially stabilized desert dunes) under Criterion VEG-2 would be less than significant for Alternative 2 and Alternative 2 would not contribute considerably to cumulative impacts.

VEG-3: HCP, NCCP, or Other Conservation Plan

No Habitat Conservation Plans (HCPs), Natural Community Conservation Plans (NCCPs), or other Conservation Plans apply to the Proposed Action or Alternatives 1 and 2.

The project site is within the area covered by the California Desert Conservation Area, as amended by the DRECP, but the Proposed Action and Alternatives are exempt from provisions of the DRECP; see Section 2.4 (Alternative 2: Avoidance Alternative). The mitigation measures and APMs identified herein substantially conform to most DRECP requirements. Nevertheless, the Proposed Action and Alternative 1 do not conform to certain DRECP requirements for Mojave fringe-toed lizard and wash habitat avoidance. Alternative 2 (the Avoidance Alternative) is included in this analysis to illustrate full conformance with the DRECP.

Since no HCPs, NCCPs, or other Conservation Plans apply to the Proposed Action and Alternatives 1 and 2, there would be no conflict and no impact would occur.

Cumulative Impacts

Under the Proposed Action and Alternatives 1 and 2, the direct and indirect impacts of project construction, O&M, and decommissioning to special-status plant taxa (if present) could combine with the effects of foreseeable projects as described in Section 4.17.3, that could result in a cumulatively significant impact under Criterion VEG-1 (impacts to special status plants). With implementation of mitigation measures and APMs listed above, impacts under Criterion VEG-1 would be less than significant and the Project would not contribute considerably to cumulative impacts.

Under the Proposed Action and Alternatives 1 and 2, the direct and indirect impacts of project construction, O&M, and decommissioning to sensitive natural communities could combine with the effects of foreseeable projects as described in Section 4.17.3, that could result in a cumulatively significant impact under Criterion VEG-2 (impacts to sensitive natural communities). With implementation of mitigation measures and APMs listed above, impacts to desert dry wash woodland, unvegetated ephemeral dry wash, and groundwater-dependent vegetation under Criterion VEG-2 would be less than significant and the Project would not contribute considerably to cumulative impacts.

The Proposed Action and Alternative 1 may have a considerable contribution to the significant cumulative loss of aeolian sand habitat and sand transport under Criterion VEG-2 (impacts to sensitive natural communities). Alternative 2, the Avoidance Alternative, would avoid significant impacts to aeolian sand habitat and sand transport through design setbacks; thus, Alternative 2 would not have significant direct or indirect impacts to these resources, and would not contribute to significant cumulative impacts. With implementation of the mitigation measures and APMs identified above, the impacts to sand habitats and sand transport for the Proposed Action and Alternative 1 would be mitigated to the extent feasible. However, it is uncertain whether sufficient

private lands meeting the habitat criteria may be available for purchase or whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values.

No HCPs, NCCPs, or other Conservation Plans apply to the Proposed Action and Alternatives 1 or 2. Therefore, the Proposed Action and Alternatives 1 and 2 would not result in a cumulatively significant impact to HCP, NCCP, or other conservation plans under Criterion VEG-3.

Conclusion: Under the CEQA Criteria VEG-1, VEG-2, and VEG-3, most potentially significant impacts of the Proposed Action and alternatives to vegetation resources would be mitigated to less than significant, and the Proposed Action or alternatives would not contribute considerably to cumulative impacts, with incorporation of the mitigation measures identified in this analysis. However, under CEQA Criterion VEG-2, the Proposed Action and Alternative 1 may have significant unmitigated impacts to windblown sand habitat and sand transport even with application of all feasible mitigation.

4.18 Visual Resources

This section discusses effects on visual resources that would occur with implementation of the Proposed Action (Project) and alternatives. It also addresses cumulative effects, and mitigation measures to avoid or reduce visual effects. Overall, the Proposed Action would result in a Right-of-Way grant for 4,200 acres, with disturbance and resulting long-term visual alteration to approximately 3,881 acres of land, nearly all of which has been classified as C-Quality[1] scenery and managed under an Interim VRM Class III designation.

An *adverse visual effect* typically occurs within public view when: (1) an action perceptibly changes existing features of the physical environment so that they no longer appear to be characteristic of the subject locality or region; (2) an action introduces new features to the physical environment that are perceptibly uncharacteristic of the region and/or locale; or (3) visually prominent natural or cultural features of the landscape become less visible (e.g., partially or totally blocked from view) or are removed. Changes that seem uncharacteristic are those that appear out of place, discordant, or distracting. The degree of the visual effect depends upon how noticeable the adverse change may be. The noticeability of a visual effect is a function of project features, context, and viewing conditions (angle of view, distance, primary viewing directions, and duration of view).

4.18.1 Impact Assessment Methodology

The Proposed Action and alternatives are analyzed for their effects on visual resources using an assessment of the visual contrast within the existing landscape created by components of the Project. Impacts to the inventoried visual resource values (as summarized in Section 3.18.2, *Visual Resource Inventory*) and conformance with Interim VRM Class Objectives (as determined in Section 3.18.2, *Interim Visual Resource Management Classes*) are evaluated through a contrast rating process described below. The severity of adverse impacts of the Project on visual values coincides with the level of visual contrast it creates in the landscape, and the degree to which it would change the inventory scores (i.e., visual quality) and outcome (overall visual change). Conformance with VRM Class Objectives is evaluated based on the following:

> **VRM Class III:** The VRM objective is to "*partially retain* the existing character of the landscape. The level of change to characteristic landscape should be *moderate*. Management activities may attract attention but *should not dominate the view of the casual observer*. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape."

If the contrast rating reveals nonconformance of the Proposed Action with VRM Class Objectives, and mitigation measures are insufficient to bring the Project into compliance, then either the Project is not approved, is redesigned, relocated, or the land use plan may need to be amended. Additionally, since the overall VRM goal is to minimize visual impacts, mitigating measures should be prepared for all adverse contrasts that can be reduced, even if the Proposed Action meets VRM objectives. In addition to the long-term visual contrast created in the landscape, the Project and alternatives are analyzed for short-term and indirect impacts due to lighting and glare, visible dust plumes, as well as temporary construction-related disturbances.

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[1] Scenic quality is rated in three categories from A (most scenic) to C (least scenic). See Section 3.18 for a discussion of scenic quality ratings.

Visual Contrast Rating Process

The degree to which the Project and alternatives adversely affect the visual quality of a landscape is directly related to the amount of visual contrast between the action and the existing landscape character. The degree of contrast is measured by separating the landscape into major features (land/water, vegetation, structures) then assessing the contrast introduced by the Project in terms of the basic design elements of form,[2] line,[3] color, and texture. The contrast of the Project with landscape elements is then rated as none, weak, moderate or strong, as defined in Table 4.18-1. The purpose of this method is to reveal elements and features that cause the greatest visual impact, and to guide efforts to reduce the visual impact of a proposed action or activity.

This process is described in detail in Handbook H-8431-1, Visual Resource Contrast Rating, and documented using BLM Form 8400-4; see PSPP PA/FEIS Appendix J (BLM, 2011).

Table 4.18-1. Visual Contrast Ratings

Degree of Contrast	Criteria
None	The element contrast is not visible or perceived.
Weak	The element contrast can be seen but does not attract attention.
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.

Source: BLM Manual 8431

The criteria for visual contrast are aligned with the management objectives for each VRM Class. For example, if a project results in weak visual contrast, it is likely to be in conformance with VRM Class II, whereas a project that results in moderate contrast would likely be in conformance with VRM Class III Objectives but would not conform to VRM Class II Objectives. Only surface disturbance activities resulting in a strong visual contrast would not be in conformance with VRM Class III Objectives.

The contrast rating assessment is completed from the most critical viewpoints, and documented with a rating form.

Selection of Key Observation Points

The intent of establishing Key Observation Points (KOPs) is to visualize the contrast created by the Proposed Action from locations most representative of how the public perceives the affected landscape. The "public," for example, may include highway travelers, travelers on local roads, off-highway vehicle users, or dispersed recreational users in surrounding wilderness areas. The sensitivity of these diverse user groups to changes in the landscape are influenced by a number of factors, including how prominent the view of the Proposed Action is (in terms of scale, distance, and angle of observation), the frequency and duration of the Project to which viewers are exposed

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2 Contrast in form results from changes in the shape and mass of landforms or structures. The degree of change depends on how dissimilar the introduced forms are to those continuing to exist in the landscape.

3 Contrasts in line results from changes in edge types and interruption or introduction of edges, bands, and silhouette lines. New lines may differ in their sub-elements (boldness, complexity, and orientation) from existing lines.

to the view, and whether the viewer groups are aware of their surroundings or expectant of high-quality views.

Information on the types and amounts of use within the vicinity of the Project is generally limited. The BLM has no traffic counters or other means to determine accurate use of open OHV routes in the vicinity of the project site. Observations by BLM staff and Law Enforcement Rangers indicate that OHV use is relatively low on routes within the vicinity of the project site, not exceeding 200-300 visits per year. Recreation and off-highway vehicle use is generally limited to the cooler months of September through May and is nearly non-existent during the summer months. In addition, little data exists on the amounts, types, and trends of visitor use experiences (such as camping, hiking, or sightseeing) within special designation areas. By far, I-10 is the most heavily used travel corridor with an estimated average annual daily traffic volume of 24,200 vehicles in 2014 (the most recent year for which Caltrans figures are available).

Of the eleven KOPs selected to evaluate the Project for the 2011 PA/FEIS, six were retained for this analysis as they were the most representative of the likely viewers of the Project and provided a range of views. The location and characteristics of each of the six retained KOPs are summarized in Table 4.18-2 and mapped in Figure 4.18-1, KOP Map, in Appendix A. The KOP numbers are retained from the original PSPP PA/FEIS.

Table 4.18-2. KOP Location and Characteristics

ID	Name	Distance to Project Site and View Direction[1]	Distance Zone[2]	Primary User Type	Use Levels
KOP-2	Highway 177 at the edge of Joshua Tree Wilderness	8 to 11 miles southeast	Background	Motorists	Moderate number of viewers traveling Highway 177 and low number of viewers in the Joshua Tree Wilderness
KOP-7	Corn Springs Road at the edge of Chuckwalla Mountains Wilderness	1.5 to 4.5 miles north	Foreground/ Middleground	Motorists, OHV users, access to Corn Springs Campground	Viewers exiting and entering the Chuckwalla Mountains Wilderness and ACEC Low levels of use
KOP-8	I-10 eastbound near the southwestern corner of the Project	0.7 to 3.7 miles east	Foreground/ Middleground	Motorists	High number of viewers traveling I-10
KOP-9	I-10 westbound near the southeastern corner of the Project	2.5 to 5.5 miles northwest	Middleground/ Background	Motorists	High number of viewers traveling I-10
KOP-10	Palen-McCoy Wilderness	3.5 to 7 miles southwest	Middleground/ Background	Dispersed recreational users	Very low levels of use
KOP-11	Chuckwalla Mountains Wilderness	4.5 to 8 miles northeast	Middleground/ Background	OHV users, dispersed recreational users, access to Corn Springs Campground	Low levels of use

1 - Distance includes closest distance and furthest distance to the project site
2 - Distance zones as defined by BLM convention (0 to 5 miles is foreground/middleground, and 5 to 15 miles is background)

Each of the selected KOPs displays a different location from which sensitive receptors can view the Project, and provides a reasonable representation of how the Project would appear when seen

from different distance zones (foreground/middleground or background). While Corn Springs Road leads to a campground as indicated in the description for KOP-7 and KOP-11, the Proposed Action would not be visible from this campground due to topographic screening.

Visual Simulations

Digital techniques were used to produce simulations of the Project as it would appear from each of the six representative KOPs. The simulations were compared to "pre-project" photographs in order to predict future visual effects of the Project for each KOP and were utilized in the completion of contrast rating forms. The paired images (existing view and visual simulation) are presented as Figure 4.18-2A, KOP 2 SR 177 Existing View, and Figure 4.18-7B, KOP 2 SR 177 Visual Simulation, in Appendix A.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.18.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.18.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. APMs relevant to visual resources include APMs 42 (managing visual resources in accordance with VRM Class IV) and 47 (following required visual resource best management practices), and are discussed in greater detail in Section 4.18.4.

4.18.2 Direct and Indirect Effects

While the effects on visual resources can be either direct or indirect, the effects are almost always direct. Two exceptions include increased traffic and fugitive dust on roadways beyond the Proposed Action area during construction and with less intensity, during operation, and the perception of (visible) regional industrialization, which is addressed under Cumulative Effects in Section 4.18.3. The short-term, indirect, traffic and fugitive dust effects on roadways beyond the Proposed Action area during construction would be the same as the direct traffic and fugitive dust effects and the reader is referred to that discussion below.

This section addresses the impacts of the Proposed Action, followed by the impacts of the two action alternatives and the No Action Alternative.

Proposed Action

The Proposed Action would consist of the construction of a photovoltaic solar energy facility utilizing tracking solar arrays. The developed area would consist of photovoltaic glass and steel solar panel arrays; access corridors for maintenance vehicles; the gen-tie (electric transmission) line; other facilities including power conversion station, transformer, PV combining switchgear, substation, and O&M facility; paved main access road; and unpaved access roads for internal access and the circulation of emergency vehicles. Table 4.18-3 provides a list of the key project features that would contribute to the apparent visual change of the landscape.

Table 4.18-3. Key Project Structures and Dimensions

Component	Key Dimensions
Solar Field	200 power blocks producing 2.5 MW AC each
Power Block	25 rows with 27 panels each
Solar Panels	18-foot maximum height
Operations and Maintenance Building	120 feet wide x 240 feet long x 19 feet tall
Substation	Covering approximately 5 acres
Perimeter Security Fence with upper barbed wire	10-foot maximum overall height
Main Access Road (paved)	1,490 feet long by 24 feet wide
Internal Access Roads (unpaved)	24 feet wide
Perimeter Road	30-foot maximum width
Gen-Tie Route	Approximately 6.7 miles in length
Gen-Tie Access Road	Up to 20 feet wide
Gen-Tie Steel Monopoles	115 to 135 feet tall
Gen-Tie Conductor Spans	900 to 1,100 feet

Proposed Action: Direct Effects

As with the originally proposed PSPP, the Proposed Action would convert approximately 3,881 acres of land within a naturally appearing desert plain landscape to an industrial facility characterized by complex, geometric forms and lines and industrial surfaces that are dissimilar to the surrounding natural landscape character.

Construction-Phase Impacts

As with the solar trough and solar power tower technologies analyzed in previous studies, construction activities associated with the Proposed Action would cause short-term direct and indirect visual impacts from the visual presence of equipment, materials, vehicles, and workforce at the solar field site and along the gen-tie right-of-way, from concrete batch plant operations and from offsite fugitive dust. From the more common viewpoints (e.g., I-10), these construction activities generally would result in a high degree of visual contrast within the landscape, which would be similar to or the same as the discussion of visual contrast ratings under operation-phase impacts except that there would be more people and equipment present during construction compared to the operation phase.

However, certain visual effects will be specific to construction activities and would include the generation of large quantities of airborne dust and nighttime construction lighting. The affected viewers would be primarily motorists on I-10, a low number of OHV users, Desert Center and Lake Tamarisk residents, and dispersed recreational users in the surrounding designated wilderness. Although the construction period is estimated to be approximately 2.5 years, construction may be phased. Activities that would generate dust, such as earthmoving and vehicle travel to and from the site on un-paved roads, would occur episodically throughout the construction period, and nighttime construction lighting, if required, would not be needed on a continuous basis.

To address these potential impacts, Section 4.2 (Air Quality) recommends mitigation for construction activities requiring that they be conducted in a manner that minimizes (visible) dust

emissions. The relevant measures are Mitigation Measure AQ-SC3 (Construction Fugitive Dust Control) and Mitigation Measure AQ-SC4 (Dust Plume Response Requirement). These measures would include limiting the speed of vehicles, surfacing construction access roads, and controlling wind erosion on soil stockpiles and exposed earth.

When nighttime construction activities take place, mitigation recommended in this section (see Section 4.18.4) requires illumination that meets State and Federal worker safety regulations. To the extent possible, the nighttime construction lighting would be directed downward or toward the area to be illuminated and would incorporate fixture hooding/shielding as described in Mitigation Measures VIS-3 (Temporary and Permanent Exterior Lighting) and BLM-VIS-2 (Night Lighting). Task-specific lighting would be used to the extent practical while complying with worker safety regulations. Disturbed areas that would not be needed during operations and maintenance of the Proposed Action would be revegetated according to Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures), VEG-12 (Decommissioning and Reclamation Plan), as well as VIS-2 (Revegetation of Disturbed Soil Areas), which requires that temporarily disturbed areas be recovered with soil, brush, rocks, and natural debris.

In summary, the generation of large quantities of airborne dust and nighttime construction lighting would result in temporary, adverse visual impacts to motorists on I-10 and other affected viewers. The level of dispersed recreational use in the area is low, and the highway travelers would be exposed to the adverse construction-related effects only briefly. However, residents of Desert Center, Lake Tamarisk, and regular visitors to the area would experience strong visual disturbances from dust plumes and nighttime lighting due to the length of time such users would be exposed to the view and their sensitivity to the scenic quality of the area. These impacts would be reduced with implementation of Mitigation Measures AQ-SC3, AQ-SC4, VIS-2, BLM-VIS-2, and VEG-12, as described above. These mitigation measures would effectively address the visual impacts from airborne dust generation, nighttime construction lighting, and staging area disturbances. However, these measures would not substantially reduce the general level of visual contrast in the landscape from large-scale vegetation removal, earthwork, operation of a concrete batch plant, as well as foundation and equipment installation. The visual impacts from airborne dust generation, nighttime construction lighting, staging area disturbances, and the general level of visual contrast in the landscape would be similar to that discussed for the PSPP due to the similar level of construction activities required and the similar scale of the solar projects.

Operation-Phase Impacts

During the operation of the Project, visual effects would be caused by the visible elements of the Project. The discussion below is divided between visual effects that are not fully captured by visual simulations (nighttime lighting and reflected sunlight/glare) and the visual contrast that would be experienced at each of the six representative KOPs.

Nighttime Lighting

As with the PSPP, the Palen Solar Project operations would require on-site nighttime lighting for safety and security. The Project would be in an area with few existing structures, and the use of uncontrolled or excessive lighting would be noticeable to nearby motorists and residents of Desert Center and Lake Tamarisk. Nighttime lighting would also affect the nighttime experience for dispersed recreational users in surrounding wilderness. As described in Mitigation Measure VIS-3,

to reduce off-site lighting impacts, lighting at the facility would be restricted to areas required for safety, security, and operation. Exterior lights would be hooded, and lights would be directed on site so that light or glare would be minimized. Low-pressure sodium lamps and fixtures of a non-glare type would be specified. Switched lighting would be provided for areas where continuous lighting would not be required for normal operation, safety, or security. The implementation of these measures would minimize the amount of lighting potentially visible to viewers of the site at night.

However, adverse effects of facility lighting are not necessarily limited to views of the site itself. Excessive lighting can also cause an adverse effect to viewers of the night sky via sky glow, which diminishes the visibility of the nighttime sky and stars. Prevention of off-site light spillage for ground observers does not necessarily prevent back-reflected light (i.e., light reflected off the ground and/or structures from down-directed lamps) from diminishing the visibility of the night sky. Normally, the contribution of project-related lighting is negligible when in an environment with abundant light sources; however, the project area is highly valued in terms of the quality of its nighttime skies. This is attributable to the scarce and scattered nature of existing light sources in the surrounding area and the prevalence of Federally administered land in the region, which limits opportunities for development. While the level of use in the surrounding wilderness is considered to be low, the high visibility of the nighttime sky and stars is an important component of the wilderness experience for many backcountry users and is highly valued by residents of the area.

It is nonetheless estimated that the contribution of the Project's lighting requirements to sky glow would be minor. Light sources currently include motorists on I-10; street lamps, residences, and other commercial/service land uses in the communities of Desert Center and Lake Tamarisk; lighting associated with the former Desert Center Airport (now a private, special-use airport); motorists on local roads; and widely scattered homesteads on private land in the region. Despite the presence of these existing light sources, the area remains highly valued for the quality of its night sky. Because permanent lighting would not be required for the arrays of photovoltaic panels, operational lighting would be confined to a small portion of the site that contains O&M facilities and the switchyard, and is unlikely to be totally out of character with other existing lighting sources found scattered throughout the Chuckwalla Valley. Further, Mitigation Measure VIS-3 includes standards that light intensity must be the minimum necessary to ensure worker safety and facility security and that direct lighting does not illuminate the nighttime sky and Mitigation Measure BLM-VIS-2 would be imposed by the BLM to avoid or reduce night lighting impacts.

While these mitigation measures would not totally eliminate the light visible by surrounding user groups, facility lighting would be minimized and controlled such that it should not be a nuisance nor detract from the ability of affected viewers to enjoy their surroundings. Because the impacts associated with nighttime lighting would be limited in nature and reduced by Mitigation Measures VIS-3 and BLM-VIS-2, they are expected to be similar in nature to those described for the PSPP.

Daytime Glare

Daytime glare from project facilities would adversely affect travelers on I-10 and nearby local roads, a low number of residents at Desert Center and Lake Tamarisk, and users of nearby desig-

nated wilderness and ACECs. However, it is expected that such glare impacts should be substantially less than the glint and glare impacts associated with the solar trough and solar power tower technologies of previous proposals because photovoltaic panels are less reflective than the mirrors used in the other technologies

Potential glare from project facilities and the high-voltage gen-tie line would be reduced by applying Mitigation Measure VIS-1. This would require that the gen-tie facilities be finished with non-specular and non-reflective material and that the insulators to be non-reflective and non-refractive. Building and structure paints and finishes would be selected to blend with the landscape. These measures would prevent glare or reduce glare to minimal levels that would not be noticeable or distracting to potential viewers.

Visual Contrast

To analyze the visual contrast in the landscape created by the Project, six representative KOPs were selected from which to conduct visual contrast analyses per the BLM's VRM method (BLM Form 8400-4, Visual Contrast Rating Worksheet). Photographs of the existing landscape and visual simulations of the Proposed Action for each KOP are presented in Appendix A (Figure 4.18-2A, KOP 2 SR 177 Existing View, and Figure 4.19-7B, KOP 2 SR 177 Visual Simulation) and were used to aid in the analysis. Conclusions on the visual contrast of the Project presented below do not take into consideration the nighttime contrast (lighting), which is discussed above.

Because of the close similarities (in terms of structure heights and project footprint) of the Proposed Action to the solar trough project analyzed in the 2011 PSPP PA/FEIS, the Visual Contrast Rating worksheets prepared for the earlier project were utilized for the current Proposed Action. The worksheets provide for a conservative impact assessment of the present project; as a solar photovoltaic project, it would actually exhibit less overall visual contrast than the solar trough proposal evaluated in the 2011 PSPP PA/FEIS contrast rating worksheets. The primary differences between the two projects are:

- The Proposed Action is smaller in scope (approximately 3,881 acres of disturbance) compared to the PSPP (approximately 5,200 acres of disturbance).
- The photovoltaic panels of the Proposed Action are less reflective compared to the solar trough concentrators of the PSPP.
- The photovoltaic panel arrays of the Proposed Action are slightly lower in height (maximum of 18 feet in height) compared to the PSPP (maximum of 22 feet in height).
- The photovoltaic panels of the Proposed Action are slightly more noticeable (than the earlier proposal) at greater distance when they are facing viewers in the maximum tilt orientation (east or west) due to the darker color of the panels.
- The solar trough arrays of the PSPP display greater structural surface glare to viewers (due to the high reflectance of the reflector surfaces) than the Proposed Action, which can be visually distracting.

For these reasons, the Proposed Action exhibits slightly less overall visual contrast than the solar trough proposal analyzed in the 2011 PSPP PA/FEIS.

As previously noted in Section 3.18.2 Existing Conditions, Scenic Quality Rating, the landscapes affected by the Proposed Action have previously been assigned a Class C rating, which is the lowest possible rating and is primarily due to the abundance of cultural modification along I-10 including roads, transmission lines, and 4WD tracks. Therefore, the introduction of the Proposed Action would not lower the Scenic Quality Rating further. However, the presence of the Project would likely lower the score for cultural modification. The presence of the Project would not lower the visual sensitivity or distance zone ratings assigned in the visual resource inventory.

Also, since the Proposed Action pre-dates the DRECP LUPA decision (which amended the CDCA Plan and changed the applicable VRM Class management objective to Class IV) and is considered a "pending project" in the LUPA, the Project would be managed in accordance with the Interim (at the time) VRM Class III objective, which allows for only a moderate level of change to the characteristic landscape while partially retaining the existing character of the landscape.

The following paragraphs address the visual contrast analysis by specific, representative KOP and assess the Proposed Action's consistency with the applicable VRM Class III management objective. Appendix A, Figure 4.18-1 (KOP Map) presents a map of the KOP locations.

KOP 2 – Highway 177 at the edge of Joshua Tree Wilderness. This KOP represents the view for southbound motorists on Highway 177 and views from low-elevation portions of the far eastern end of Joshua Tree National Park (JTNP) (Appendix A, Figure 4.18-2A, KOP 2 SR 177 Existing View). In this portion of JTNP, there are no hiking trails, picnic areas, campgrounds, or other visitor-serving facilities; thus, visitor use in the area is expected to be low. The Project is located approximately 8 to 11 miles southeast of this KOP, and while the solar arrays and gen-tie line would be within the frame of view from this distant KOP, the solar arrays would appear as a medium-gray streak along the distant valley floor near the base of the central mountain ranges. The gray coloration would be consistent during all periods of the day as the view from the north would predominantly capture the lower support structures in shadow. The existing gray band along the valley floor in Figure 4.18-2A, KOP 2 SR 177 Existing View, and Figure 4.18-2B, KOP 2 SR 177 Visual Simulation, is an existing palm farm. The gen-tie line would not be noticeable at this viewing distance.

As illustrated in the afternoon (westward panel tilt) visual simulation presented as Figure 4.18-2B, KOP 2 SR 177 Visual Simulation, in Appendix A, the levels of visual contrast (form, line, color, and texture) that would be caused by the Proposed Action would be weak when viewed from KOP 2 and similar in nature to the contrast described for the PSPP. The overall low level of visual change would be consistent with the applicable VRM Class III management objective. Implementation of Mitigation Measures VIS-1, VIS-2, and VIS-4 would reduce the degree of perceptible color contrast in the landscape, and are, therefore, recommended.

KOP 7 – Corn Springs Road at the edge of Chuckwalla Mountains Wilderness. This KOP represents the view for northbound travelers on Corn Springs Road exiting the Chuckwalla Mountains Wilderness (Appendix A, Figure 4.18-3A, KOP 7 Corn Springs Road Existing View). The view from KOP 7 captures a central portion of Chuckwalla Valley and Palen Dry Lake, backdropped by the Palen Mountains and Coxcomb Mountains. An existing utility corridor is also prominently visible in the foreground of the view. The project site is located approximately 1.5 to 4.5 miles north of this KOP, and the solar arrays would be highly visible as a prominent, dark-

gray, linear feature along the valley floor (Appendix A, Figure 4.18-3B, KOP 7 Corn Springs Road Visual Simulation) and would likely dominate the view of the casual observer. The gen-tie line (steel poles) would also be visible though not prominent.

As illustrated in the visual simulation presented as Figure 4.18-3B, KOP 7 Corn Springs Road Visual Simulation, the levels of visual contrast (form, line, and color) that would result from the solar arrays would be moderate to strong when viewed from KOP 7, the same level of visual contrast as found for the PSPP. The resulting overall moderate to high level of visual change would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Implementation of Mitigation Measures VIS-1, VIS-2, and VIS-4 is recommended as they would reduce the visual contrast created by the Proposed Action, though not sufficiently to bring the action into compliance with the VRM Class III management objective. Therefore, the resulting visual change would remain adverse and unavoidable.

KOP 8 – I-10 eastbound near the southwestern corner of the Project. This KOP represents the view for eastbound motorists on I-10 (Appendix A, Figure 4.18-4A, KOP 8 Eastbound I-10 Existing View). The view from KOP 8 captures a portion of the central Chuckwalla Valley north of I-10 and south of the Palen Mountains. The project site is located approximately 0.7 to 3.7 miles north of this KOP, and the solar arrays would be prominently visible as a dark-gray, linear, horizontal feature along the valley floor as shown in the afternoon (westward panel tilt) simulation presented as Figure 4.18-4B, KOP 8 Eastbound I-10 Visual Simulation, in Appendix A. The gen-tie line (steel poles) would also be visible though not prominent. The Proposed Action would dominate the view of the casual observer.

As illustrated in the visual simulation presented as Figure 4.18-4B, KOP 8 Eastbound I-10 Visual Simulation, the levels of visual contrast (form, line, and color) that would result from the solar arrays would be moderate to strong when viewed from KOP 8, which is a slightly reduced level of contrast compared to the PSPP which would have resulted in a strong contrast for this KOP. The resulting overall moderate to high level of visual change would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Implementation of Mitigation Measures VIS-1, VIS-2, and VIS-4, is recommended as they would reduce the visual contrast created by the Proposed Action, though not sufficiently to bring the action into compliance with the VRM Class III management objective. Therefore, the resulting visual change would remain adverse and unavoidable.

KOP 9 – I-10 westbound near the southeastern corner of the Project. This KOP represents the view for westbound motorists on I-10 (Appendix A, Figure 4.18-5A, KOP 9 Westbound I-10 Existing View). The southeast corner of the project site is located approximately 1.6 miles northwest of this KOP. This view encompasses a central portion of Chuckwalla Valley with the Eagle Mountains and Coxcomb Mountains providing background features of visual interest. From the vantage point of KOP 9, the solar arrays would appear as a partially obscured (by intervening vegetation), dark-gray, horizontal feature along the valley floor. The gen-tie line (steel poles) would not be noticeable.

As illustrated in the morning (eastward panel tilt) visual simulation presented as Figure 4.18-5B, KOP 9 Westbound I-10 Visual Simulation, in Appendix A, the levels of visual contrast (for form, line, color, and texture) that would be caused by the Proposed Action would range from weak to

moderate when viewed from KOP 9, which is a reduced level of contrast compared to the PSPP which would have resulted in a strong contrast for this KOP. The overall low to moderate level of visual change would be consistent with the applicable VRM Class III management objective. Implementation of Mitigation Measures VIS-1, VIS-2, and VIS-4 are, however, recommended as they would reduce the visual contrast created by the Proposed Action.

KOP 10 – Palen-McCoy Wilderness. This KOP represents a view for low numbers of dispersed recreational users in the Palen-McCoy Wilderness (Appendix A, Figure 4.18-6A, KOP 10 Palen McCoy Wilderness Existing View). This elevated view from KOP 10 captures a central portion of Chuckwalla Valley, backdropped by the Chuckwalla Mountains. The project site is located approximately 4.3 miles southwest of KOP 10, and the solar arrays would be prominently visible as a dark-gray, irregular, rectilinear, geometric shape with strong, well-defined edges. The gen-tie line (steel poles) would be only faintly visible at this viewing distance due to blending with the valley floor. Also, due to the considerable viewing distance and the flat form of the valley floor, there is only weak contrast with respect to valley floor landform features. The grading involved to create a nearly flat site would unlikely be noticed from this distance, and the solar arrays would generally appear coincident in form with the flat valley floor.

However, as illustrated in the morning (eastward panel tilt) visual simulation presented as Figure 4.18-6B, KOP 10 Palen McCoy Wilderness Visual Simulation, in Appendix A, the levels of visual contrast (for form, line, and color) that would result from the solar arrays would be moderate to strong when viewed from KOP 10 and other elevated vantage points, which is similar to the level of contrast for the PSPP. The overall moderate to high level of visual change that would be caused by the Proposed Action would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Implementation of Mitigation Measures VIS-1, VIS-2, and VIS-4 is recommended as they would reduce the visual contrast created by the Proposed Action, though not sufficiently to bring the action into compliance with the VRM Class III management objective. Therefore, the resulting visual change would remain adverse and unavoidable.

KOP 11 – Chuckwalla Mountains Wilderness. This KOP represents a view for low numbers of dispersed recreational users in the Chuckwalla Mountains Wilderness and Corn Springs camping area (Appendix A, Figure 4.18-7A, KOP 11 Chuckwalla Mountains Wilderness Existing View). This slightly elevated view from KOP 11 captures a central portion of Chuckwalla Valley, backdropped by the Palen Mountains. The project site is located approximately 5 miles northeast of KOP 11, and the solar arrays would be prominently visible as a narrow, dark-gray, irregular, rectilinear, geometric shape with strong, well-defined edges along the valley floor, attracting the attention of the casual observer. The easternmost portion of the gen-tie line (steel poles) would be only faintly visible at this viewing distance due to blending with the valley floor.

As illustrated in the afternoon (westward panel tilt) visual simulation presented as Figure 4.18-7B, KOP 11 Chuckwalla Mountains Wilderness Visual Simulation, in Appendix A, the levels of visual contrast (for form, line, and color) that would result from the solar arrays would be moderate to strong when viewed from KOP 11 and other elevated vantage points, which is similar to the level of contrast for the PSPP. The overall moderate to high level of visual change that would be caused by the Proposed Action would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Implementation of Mitigation Measures

VIS-1, VIS-2, and VIS-4 is recommended as they would reduce the visual contrast created by the Proposed Action, though not sufficiently to bring the action into compliance with the VRM Class III management objective. Therefore, the resulting visual change would remain adverse and unavoidable.

Impacts to BLM Wilderness Areas and Joshua Tree National Park

The three wildernesses areas in the vicinity (1.5 to 7 miles) of the project site have no developed trails, parking/trailheads, or other visitor use facilities. These areas are generally steep, rugged mountains, with no permanent natural water sources, thus limiting extensive hiking or backpacking opportunities. Visitor use within the wilderness areas is very light, though BLM has no visitor use counts.

Observations by staff and Law Enforcement Rangers indicate only 100 to 200 hikers per year within the wilderness areas. Visitation to the desert peaks listed by the Sierra Club Angeles Chapter is discussed in Chapter 3. More popular is vehicle camping along roads that are adjacent to the wilderness areas. RV camping near wilderness areas, with associated hiking, OHV use, photography, sightseeing, etc., accounts for up to 2,000 visitors per year.

While some portions of the wilderness areas would experience views of the project site, opportunities for solitude and unconfined recreation would not be greatly impacted due to the distance of the Project from the wilderness areas. From the majority of wilderness areas, the Project would be located in background zones or not visible at all. Where the Proposed Action would be readily visible in mountainous areas beyond 5 miles, the level of contrast would likely remain below "strong" because it would not dominate the view as a whole at these greater viewing distances. The open, unobstructed, and panoramic views would remain dominated by the more visually appealing elements of the scene, such as the rugged mountain ranges, the open sky, and the undisturbed portions of the valley floor. For portions of designated wilderness within 5 miles of the Project, the level of contrast would likely be strong because the Proposed Action would begin to dominate views of the valley and would not be in compliance with VRM objectives, as discussed above for KOPs 10 and 11. The portion of JTNP where the Proposed Action would be visible would be within the background visibility zone and does not contain visitor-serving facilities such as hiking trails, campgrounds, or picnic areas, which occur in the central and western portions of the park — areas from which the Proposed Action would not be visible. Therefore, impacts to the overall visitor experience in BLM wilderness areas and JTNP would not be substantial.

Decommissioning

The purpose of decommissioning is to remove project-related structures and infrastructure so that affected lands can naturalize. However, until vegetative restoration is achieved, adverse visual impacts would be similar to those described in the operation-phase impacts because large areas would be devoid of desert scrub vegetation. Visual effects from the proposed transmission lines would be likely to remain, however, since it seems likely that, once in use, such lines would remain in use regardless of whether the energy they transfer is generated by the Project or another project. The impacts of decommissioning would be somewhat reduced in intensity, however, as compared to construction because the industrial character and color contrast associated with the solar arrays would be removed. However, this benefit would be somewhat muted by increased color contrast of exposed soils devoid of vegetation. The contrast in the design elements of form and line would

remain. Implementation of VIS-2 and VIS-4 would aid greatly in reducing the visual effects of decommissioning. VIS-2, VEG-8, and VEG-12 would require the Closure, Revegetation and Rehabilitation Plan to include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the other ancillary operation and support structures. Further, VIS-4 would reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. It would require replacement of soil, brush, rocks, and natural debris over disturbed areas and would feather and thin the edges of cleared areas to reduce edge contrasts. Newly introduced plant species would be of a form, color, and texture that blends with the landscape. These measures would ensure the visual impacts of decommissioning are minor and short-term.

Proposed Action: Indirect Effects

As previously noted, while the vast majority of effects on visual resources are typically direct, two exceptions include increased traffic on roadways beyond the Proposed Action area during construction (addressed here) and perceptions of (visible) regional industrialization (addressed under Cumulative Effects in Section 4.18.3).

It is estimated that the average number of construction-related automobile trips would be 588 one-way trips (Section 2.2.4 Construction Activities, Construction Vehicles and Equipment). Even if all of those trips are assigned to I-10, the 588 trips would constitute only a less than 2.5 percent increase in ADT relative to the existing 24,200 daily trips on I-10 (in the project area as of 2014). This slight increase in traffic would not be perceived as a visually noticeable change, and the overall visual effect would not be substantial.

Alternative 1 – Reduced Footprint Alternative

Construction-Phase Impacts

The Reduced Footprint Alternative would avoid placing panel arrays within the primary central wash that crosses the project site from southwest to northeast by extending the panel arrays to the north in the western half of the site and reconfiguring the eastern half of the site. The developed area would still be within the original project boundary and would result in relatively minor changes to the overall project footprint. This alternative would still be a 500 MW project and the construction techniques, water use, and necessary vehicles would be the same as those required for the Proposed Action. Therefore, construction-phase impacts would be essentially the same as those previously described for the Proposed Action and the reader is referred to that discussion above.

Operation-Phase Impacts

Nighttime lighting and daytime glare would also be the same as for the Proposed Action and the reader is referred to those discussions above. Visual contrast attributable to the Reduced Footprint Alternative is addressed in the following paragraphs.

Visual Contrast

The design change for the Reduced Footprint Alternative relative to the Proposed Action is relatively minor from the standpoint of visual effects because the difference in visual contrast resulting from the reduced project footprint would be minimally perceptible to the casual observer when

viewed from most of the representative KOPs (see Figure 4.18-1, KOP Map, in Appendix A) as discussed below.

KOP 2 – SR 177. From this more distant (8.0 miles north) KOP the elimination of the panel arrays in the central wash area and reconfiguration of arrays elsewhere on the site would not result in a discernible difference between the visual contrast of the Proposed Action and the Reduced Footprint Alternative (the overall low level of visual change would be consistent with the applicable VRM Class III management objective). Therefore, the reader is referred to the discussion of KOP 2 under the Proposed Action above and Figure 4.18-2A, KOP 2 SR 177 Existing View, and Figure 4.18-2B, KOP 2 SR 177 Visual Simulation, in Appendix A.

KOP 7 – Corn Springs Road at the edge of Chuckwalla Mountains Wilderness. KOP 7 is approximately 1.5 miles south of the project site and is slightly higher in elevation (approximately 215 feet higher than the project site). From this vantage point, the Reduced Footprint Alternative would appear essentially the same as the Proposed Action (i.e., a narrow dark streak along the valley floor) with the only difference between a brief gap in the panel arrays (linear streak) at the central wash. The gap is slightly more noticeable from the slightly higher elevation vantage point of KOP 11 discussed later in this section. The resulting visual contrast would still be the same as discussed for the Proposed Action and the resulting overall moderate to high level of visual change would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Therefore, the reader is referred to the discussion of KOP 7 under the Proposed Action above and Figure 4.18-3A, KOP 7 Corn Springs Road Existing View, and Figure 4.18-3B, KOP 7 Corn Springs Road Visual Simulation, in Appendix A.

KOP 8 – I-10 eastbound near the southwestern corner of the Project. KOP 8 is located on eastbound I-10 just west of the Corn Springs Road overpass. From this vantage point (and most views from I-10), the Reduced Footprint Alternative would appear the same as the Proposed Action (i.e., a dark streak along the valley floor) because the angle of view would not show the gap in the panel arrays at the central wash and the reconfiguration of arrays in the western and eastern portions of the site would not be noticeable. Figure 4.18-8, KOP 8 Eastbound I-10 Alternatives Comparison, provides a Google Earth perspective comparison between the Proposed Action (Panel A in the figure) and the Reduced Footprint Alternative (Panel B in the figure). As illustrated in these perspective views from KOP 8, the geographic footprints of the Proposed Action and alternative appear the same. Therefore, the resulting visual contrast would be the same as discussed for the Proposed Action and the resulting overall moderate to high level of visual change would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Therefore, the reader is referred to the discussion of KOP 8 under the Proposed Action above and Figure 4.18-4A, KOP 9 Eastbound I-10 Existing View, and Figure 4.18-4B, KOP 9 Eastbound I-10 Visual Simulation, in Appendix A.

KOP 9 – I-10 westbound near the southeastern corner of the Project. KOP 9 is located on westbound I-10, approximately 1.6 miles southwest of the southwest corner of the project site. From this vantage point, the Reduced Footprint Alternative would appear essentially the same as the Proposed Action (dark streak along the valley floor though substantially screened by intervening vegetation) because the angle of view would not show the gap in the panel arrays at the central wash. The reconfigured panel arrays in the eastern half of the site may appear to extend slightly farther to the north (to the right in the visual simulation presented as Figure 4.18-5B, KOP

9 Westbound I-10 Visual Simulation, in Appendix A) but these would be partially obscured by intervening vegetation and the overall appearance would be similar. Therefore, the resulting visual contrast would be essentially the same as discussed for the Proposed Action and the resulting overall low to moderate level of visual change would be consistent with the applicable VRM Class III management objective. Therefore, the reader is referred to the discussion of KOP 9 under the Proposed Action above and Figure 4.18-5A, KOP 9 Westbound I-10 Existing View, and Figure 4.18-5B, KOP 9 Westbound I-10 Visual Simulation, in Appendix A.

KOP 10 – Palen-McCoy Wilderness. KOP 10 is located in the Palen McCoy Wilderness, approximately 4.3 miles northeast of the project site. While the differences between the Proposed Action and Reduced Footprint Alternative footprints are more apparent from this elevated vantage point (approximately 1,500-ft elevation), the overall visual appearance would appear similar (distant light- to dark-gray geometric pattern on the valley floor). Figure 4.18-9, KOP 10 Palen McCoy Wilderness Alternatives Comparison, in Appendix A provides a Google Earth perspective comparison between the Proposed Action (Panel A in the figure) and the Reduced Footprint Alternative (Panel B in the figure). As illustrated in these perspective views from KOP 10, the geographic footprint of the Reduced Footprint Alternative, while slightly different owing to the gap at the central wash area and slight reconfigurations in the eastern (left) and western (right) portions of the site, would constitute a prominent visual element in the valley landscape, similar to that of the Proposed Action. Therefore, the resulting visual contrast would be as discussed for the Proposed Action and the resulting overall moderate to high level of visual change would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Therefore, the reader is referred to the discussion of KOP 10 under the Proposed Action above and Figure 4.18-6A, KOP 10 Palen McCoy Wilderness Existing View, and Figure 4.18-6B, KOP 10 Palen McCoy Wilderness Visual Simulation, in Appendix A.

KOP 11 – Chuckwalla Mountains Wilderness. KOP 11 is located on Corn Springs Road within the Chuckwalla Mountains Wilderness, approximately 4.8 miles southwest of the southwest corner of the project site. From this slightly elevated vantage point (approximately 520 feet higher than the project site), the gap in the panel arrays at the central wash area would be noticeable as illustrated in the Google Earth perspective view from KOP 11 provided as Panel B in Figure 4.18-10, KOP 11 Chuckwalla Mountains Wilderness Alternatives Comparison, in Appendix A. The reconfigurations of the panel arrays in the eastern and western portions of the site would not be noticeable to the casual observer and the overall appearance of the Reduced Footprint Alternative would essentially be the same as the Proposed Action (i.e., a dark gray, irregular, linear streak along the valley floor). The resulting visual contrast would also be the same as discussed for the Proposed Action and the resulting overall moderate to high level of visual change would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Therefore, the reader is referred to the discussion of KOP 11 under the Proposed Action above and Figure 4.18-7A, KOP 11 Chuckwalla Mountains Wilderness Existing View, and Figure 4.18-7B, KOP 11 Chuckwalla Mountains Wilderness Visual Simulation, in Appendix A.

Impacts to BLM Wilderness and Joshua Tree National Park, Decommissioning Impacts, and Indirect Effects

Impacts to BLM Wilderness and Joshua Tree National Park, decommissioning impacts, and indirect effects would all be the same as those previously described for the Proposed Action and the reader is referred to those discussions above.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative would limit site development to approximately 1,620 acres, less than half of the approximately 4,200 developable acres under the Proposed Action. It is estimated that the Project would generate approximately 200 MW and that the construction techniques, water use, and necessary vehicles would be approximately half of that required for the Proposed Action. In addition, Conservation and Management Action (CMA) Development Focus Area (DFA)-VRM-2 would be required as described below.

- **DFA-VRM-2, Regional mitigation for visual impacts is required in DFAs.** Mitigation is to be based on the VRI class and the underlying visual values (scenic quality, sensitivity, and distance zone) for the activity area as it stands at the time the ROD is signed for the DRECP LUPA. Compensatory mitigation may take the form of reclamation of other BLM lands to maintain (neutral) or enhance (beneficial) visual values on VRI Class II and Class III lands. Other considerations may include acquisition of conservation easements to protect and sustain visual quality within the viewshed of BLM lands. The following mitigation ratio will be applied in DFAs: VRI Class II 1:1 ratio; VRI Class III 0.5:1 ratio; and VRI Class IV, no mitigation required.

  As indicated in CMA DFA-VRM-2 above, the more sensitive the VRI classification, the greater the mitigation required. Thus, VRI Class II areas require greater mitigation (when impacted) than VRI Class III areas, and VRI Class IV areas (which allow for high levels of visual change) require no mitigation at all. For the PSP, the applicable mitigation ratio would be 0.5:1 given that the affected lands are assigned VRI Class III. Additional mitigation will be required where activities affect the viewshed of specially designated areas (e.g., National Scenic and Historic Trails).

Construction-Phase Impacts

The type of construction-phase impacts would be like those discussed under the Proposed Action above but smaller in scale due to the reduced footprint. The reader is referred to the discussion of construction-phase impacts for the Proposed Action above.

Operation-Phase Impacts

Nighttime lighting and daytime glare would also be similar to the Proposed Action and the reader is referred to those discussions above. Visual contrast attributable to the Avoidance Alternative would also be similar to that of the Proposed Action and is addressed in the following paragraphs by KOP.

Visual Contrast

Although the Avoidance Alternative would have a substantially smaller development footprint, given the still relatively large scale of the Project, the Project's appearance and resulting visual contrast would still be similar to that of the Proposed Action. The following paragraphs address the Avoidance Alternative's appearance and resulting visual contrast by KOP and refer to the applicable contrast analysis presented under the Proposed Action.

KOP 2 – SR 177. From this more distant (8.0 miles north) KOP on southbound SR 177, the reconfiguration and reduction in the number of panel arrays associated with the Avoidance Alternative would not be noticeable to the casual observer (travelers) on SR 177. Similar to the Proposed Action, the overall low level of visual change would be consistent with the applicable VRM Class III management objective. Therefore, the reader is referred to the discussion of KOP 2 under the Proposed Action above and Figure 4.18-2A, KOP 2 SR 177 Existing View, and Figure 4.18-2B, KOP 2 SR 177 Visual Simulation, in Appendix A.

KOP 7 – Corn Springs Road at the edge of Chuckwalla Mountains Wilderness. KOP 7 is approximately 1.5 miles south of the project site and is slightly higher in elevation (approximately 215 feet higher than the project site). From this vantage point, the Avoidance Alternative would appear very similar to the Proposed Action (i.e., a narrow dark streak along the valley floor) with the primary differences being a brief gap in the panel arrays (linear streak) at the central wash and a slightly less prominent horizontal line of development (panel arrays) in the eastern portion of the development site. The resulting visual contrast would be slightly less than that for the Proposed Action but the resulting overall moderate to high level of visual change would still not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Therefore, the reader is referred to the discussion of KOP 7 under the Proposed Action above and Figure 4.18-3A, KOP 7 Corn Springs Road Existing View, and Figure 4.18-3B, KOP 7 Corn Springs Road Visual Simulation, in Appendix A.

KOP 8 – I-10 eastbound near the southwestern corner of the Project. KOP 8 is located on eastbound I-10 just west of the Corn Springs Road overpass. From this vantage point (and most views from I-10), the Avoidance Alternative would appear similar to the Proposed Action (dark streak along the valley floor) because the angle of view would not show the gap in the panel arrays at the central wash though the reduction of panel arrays in the eastern portion of the site would make that portion of the site appear slightly less developed. Figure 4.18-8, KOP 8 Eastbound I-10 Alternatives Comparison, provides a Google Earth perspective comparison between the Proposed Action (Panel A in the figure) and the Avoidance Alternative (Panel C in the figure). As illustrated in these perspective views from KOP 8, the geographic footprints of the Proposed Action and alternative appear relatively similar. Therefore, the resulting visual contrast would be similar (slightly reduced) to that of the Proposed Action, and the resulting overall moderate to high level of visual change would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Therefore, the reader is referred to the discussion of KOP 8 under the Proposed Action above and Figure 4.18-4A, KOP 8 Eastbound I-10 Existing View, and Figure 4.18-4B, KOP 8 Eastbound I-10 Visual Simulation, in Appendix A.

KOP 9 – I-10 westbound near the southeastern corner of the Project. KOP 9 is located on westbound I-10, approximately 1.6 miles southeast of the southeast corner of the project site. From

this vantage point, the Avoidance Alternative would appear similar to the Proposed Action (i.e., a dark streak along the valley floor substantially screened by intervening vegetation) but would not extend quite as far north into the valley due to the revised footprint of the reconfigured panel arrays. Also, from this angle of view, gaps in the panel arrays would not be noticeable. Therefore, the Project's appearance and resulting visual contrast would essentially be the same as that for the Proposed Action. Similarly, the overall low to moderate level of visual change would be consistent with the applicable VRM Class III management objective and the reader is referred to the discussion of KOP 9 under the Proposed Action above and Figure 4.18-5A, KOP 9 Westbound I-10 Existing View, and Figure 4.18-5B, KOP 9 Westbound I-10 Visual Simulation, in Appendix A.

KOP 10 – Palen-McCoy Wilderness. KOP 10 is located in the Palen McCoy Wilderness, approximately 4.3 miles northeast of the project site. While the differences between the Proposed Action and Avoidance Alternative footprints are more apparent from this elevated vantage point (approximately 1,500-ft elevation), the overall visual appearance would be similar (distant light- to dark-gray geometric patterns on the valley floor). Figure 4.18-9, KOP 10 Palen McCoy Wilderness Alternatives Comparison, in Appendix A provides a Google Earth perspective comparison between the Proposed Action (Panel A in the figure) and the Avoidance Alternative (Panel C in the figure). As illustrated in these perspective views from KOP 10, the geographic footprint of the Avoidance Alternative, would be noticeably reduced but would still extend a similar distance down the valley. The scale of the Avoidance Alternative would still constitute a prominent visual element in the valley landscape similar to the Proposed Action and the resulting visual contrast would be as discussed for the Proposed Action above. Further, the overall moderate to high level of visual change associated with the Avoidance Alternative would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Since the effects of the Avoidance Alternative would essentially be the same as the Proposed Action, the reader is referred to the discussion of KOP 10 under the Proposed Action above and Figure 4.18-6A, KOP 10 Palen McCoy Wilderness Existing View, and Figure 4.18-6B, KOP 10 Palen McCoy Wilderness Visual Simulation, in Appendix A.

KOP 11 – Chuckwalla Mountains Wilderness. KOP 11 is located on Corn Springs Road within the Chuckwalla Mountains Wilderness, approximately 4.8 miles southwest of the southwest corner of the project site. From this slightly elevated vantage point (approximately 520 feet higher than the project site), the gap in the panel arrays at the central wash area would be noticeable as would the reduced array footprint in the eastern half of the project site. These differences are illustrated in the Google Earth perspective view from KOP 11 provided as Panel C in Figure 4.18-10, KOP 10 Palen McCoy Wilderness Alternatives Comparison, in Appendix A. However, the overall appearance of the Avoidance Alternative would essentially be the same as the Proposed Action (i.e., a dark gray, irregular, linear streak along the valley floor). The resulting visual contrast would also be the same as discussed for the Proposed Action and the resulting overall moderate to high level of visual change would not be consistent with the applicable VRM Class III management objective (level of change should not exceed moderate). Therefore, the reader is referred to the discussion of KOP 11 under the Proposed Action above and Figure 4.18-7A, KOP 11 Chuckwalla Mountains Wilderness Existing View, and Figure 4.18-7B, KOP 11 Chuckwalla Mountains Wilderness Visual Simulation, in Appendix A.

Any residual visual resources impacts following implementation of the above mitigation measures would be subject to the Conservation and Management Action compensation requirements spelled

out in CMA DFA-VRM-2 (Regional mitigation for visual impacts is required in DFAs). DFA-VRM-2 outlines several types of potential compensation mitigation, but the selection and implementation of specific compensation would be established in future negotiations between the Applicant and lead agency.

Impacts to BLM Wilderness and Joshua Tree National Park, Decommissioning Impacts, and Indirect Effects

Impacts to BLM Wilderness and Joshua Tree National Park, decommissioning impacts, and indirect effects would all be the same as those previously described for the Proposed Action and the reader is referred to those discussions above.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not preclude the site to development in the future. The type of project that would be developed at this site is outside the scope of this Supplemental EIS/EIR. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA

4.18.3 Cumulative Effects

Geographic Scope

Impacts resulting from construction, operation, maintenance and decommissioning of the Project would result in a cumulative effect on visual resources with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for visual resources consists of the I-10 corridor, the greater Chuckwalla Valley, and the surrounding mountains. This geographic scope was established based on the natural boundaries of the affected resource (i.e., potential shared viewsheds) and not on jurisdictional boundaries. The geographic scope generally encompasses existing and future projects within 15 miles of the Project.

Existing and reasonably foreseeable future actions making up the cumulative scenario are:

- West-wide Section 368 Energy Corridors
- Genesis Solar Energy Project
- Desert Sunlight Solar Project
- SCE Red Bluff Substation
- Desert Palo Verde 1 Transmission Line
- Desert Palo Verde 2 Transmission Line
- Blythe Energy Project Transmission Line
- Desert Renewable Energy Conservation Plan
- Desert Southwest Transmission Line
- Eagle Mountain Pumped Storage Project
- Desert Harvest Solar Farm
- DC50 Solar Project
- SunEdison Jupiter Project (CACA 56477)
- First Solar Development LLC (CACA 56782)
- SunPower Project
- Plot Plan No. 23577, Revised Permit No. 2

These include eight local existing (past and present) energy projects and eight local reasonably foreseeable future energy projects. These projects would all be within the field of view of the

Proposed Action and are expected to result in cumulative visual impacts for travelers along I-10 as well as dispersed recreational users in the surrounding areas.

An additional eight regional projects would not be within the same field of view as the Proposed Action but would contribute to a cumulative sense of industrialization along the I-10 corridor from Desert Center to Blythe. These are:

- Blythe PV Project
- McCoy Solar Project
- Blythe Solar Power Project
- SCE Colorado River Substation
- Sonoran Energy Project
- Desert Quartzite Solar Project
- Crimson Solar Project
- Blythe Mesa Solar Project

Cumulative Impact Analysis

Travelers on I-10

Visual changes would result from other projects would located within the viewshed of travelers along I-10 viewing the Project. Given the relatively close proximity of the projects (within 0.75 miles to 15 miles of the Project), all of the projects would be visible within the same field of view as the proposed project depending on the location of the viewer along I-10. Further, the combined effect of large-scale landscape alterations (local and regional cumulative projects) that would be visible along the length of I-10 would substantially degrade the visual character and the general scenic appeal of the landscape.

Numerous existing cultural modifications are visible from the I-10 corridor including transmission lines, substations, pipelines, solar projects, 4-wheel drive tracks, and widely scattered commercial buildings, dilapidated structures, roadside signs, and a few agricultural operations. However, given the grand scale of the open desert panoramas, the general character is of an unimpaired, isolated desert landscape. The cumulative scenario includes many large-scale solar plants whose scale, potential glare, and pervasiveness would have adverse cumulative effects. If all the projects were implemented, they would convert a substantial number of acres along the I-10 corridor between Desert Center and Blythe (approximately 50 miles) from an undeveloped desert viewshed to a more industrialized appearance (mostly with large solar array fields using both thermal and photovoltaic technologies).

In many cases, the apparent scale of the projects from motorists' perspectives would be diminished somewhat by favorable topographic relationships. All but potentially one of the projects are at the same or similar elevation as the highway, and all are reduced in prominence due to their distances from the highway and low angle of view from I-10. In some cases, the other projects in the cumulative scenario would blend in with the horizon line of the valley floor, and the rugged mountains would remain the dominant visual features in the landscape. In spite of this, because much of the landscape is currently undeveloped and valued by visitors for its isolated and unspoiled condition, the addition of numerous, new, large-scale solar projects would substantially degrade the scenic experience for many travelers along I-10 due to the "industrialization" of the landscape and increased visual contrast. Mitigation measures are available to reduce the color contrast of some structure types or the line contrast of vegetation clearing but no mitigation is available to adequately address the scale, form, and color contrasts exhibited by the expanse of panel arrays and

numerous transmission structures associated with these projects. Thus, the cumulative scenario would present an unavoidable and adverse impact for travelers along I-10.

Dispersed Recreational Users in Surrounding Mountains

Dispersed recreational users in the Palen-McCoy Mountains, Chuckwalla Mountains, JTNP, and Joshua Tree Wilderness surrounding the Project would experience visual impacts due to their elevated position and access to unencumbered, panoramic views of the valley below. The Project, along with other projects in the cumulative scenario, would not result in direct visual alteration to BLM wilderness areas or JTNP; however, the scale and contrast created by numerous renewable energy projects would greatly alter views of the valley floor experienced by wilderness users. Existing cultural modifications on the valley floor are largely limited to linear alignments (e.g., roads and transmission lines) or other structures that are diminished in importance due to the considerable distance from which they are viewed. However, the cumulative scenario presents numerous large-scale renewable energy projects that would be readily apparent to most wilderness users.

As discussed above, the Project would contribute to the development visible from these areas. In combination with other projects, it would make the valleys surrounding the Palen-McCoy, Chuckwalla Mountains Wilderness, and Joshua Tree Wilderness appear to be increasingly industrialized and would substantially diminish the remote and isolated character of the landscape as viewed from mountainsides facing the Chuckwalla Valley. While use levels in the mountains and wilderness surrounding the Project are low, the remote and isolated character of the landscape is highly valued by its users and would represent the primary attraction.

In addition, the cumulative scenario would have substantial adverse effects on night sky visibility for users of designated wilderness and JTNP. Night sky visibility is a highly valued attribute of the region, and park rangers at JTNP often conduct night sky programs for visitors. These programs are conducted in the western portion of the park outside the viewshed of the solar energy zone, but the effects from excess lighting can reach beyond the viewshed of a specific area. Due the Project's distance from the JTNP and lighting controls imposed by Mitigation Measure VIS-3, the night lighting from the Project, alone, would be minimized and controlled such that it would not be a nuisance and would not detract from the ability of viewers to enjoy their surroundings. However, the cumulative scenario presents many developments in the Chuckwalla Valley that, together, would have an adverse effect on night sky visibility. The degree to which implementation of similar measures at other facilities would reduce the cumulative impact is difficult to quantify, but the potential exists for numerous additional light sources to contribute to night sky glow. As such, additional lighting standards are recommended in Mitigation Measure BLM-VIS-2, which includes coordination with the National Park Service Night Sky Program Manager and stricter standards for the type and intensity of facility lighting, during both construction and operations.

For the general visual degradation of the Chuckwalla Valley for backcountry hikers in the mountains seeking solitude and nature, available mitigation measures would not feasibly reduce the scale and contrast created by the projects in the cumulative scenario. Thus, the cumulative scenario presents an unavoidable and adverse impact for dispersed recreational users in surrounding, higher-elevation wilderness areas.

4.18.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the Applicant Proposed Measures (APMs). There are two APMs relevant to visual resources (Section 2.2.7, Chapter 2). Table 4.18-5 explains how these measures reduce project effects, and how they relate to mitigation measures recommended below.

Table 4.18-4. Applicant Proposed Measures for Visual Resources

APM #	Text	Explanation
APM-42	Manage Visual Resources in accordance with VRM Class IV.	This measure was not incorporated into the analysis because the Proposed Action location would be managed only in accordance with VRM Class IV under the DRECP. Since the Project is exempt from the DRECP, the management remains Class III.
APM-47	**Required Visual Resource BMPs.** The Project will abide by the BMPs addressed in the most recent version of the document "Reducing Visual Impacts of Renewable Energy Facilities on BLM-Administered Lands," or its replacement, including, but not limited to the following: ▪ Color treat all solar facilities Shadow Gray from the BLM Environmental Color Chart CC001 unless a more effective color is selected by the Field Office VRM specialist. ▪ Transmission: – Color treat monopoles Shadow Gray per the BLM Environmental Color Chart CC001 unless a more effective color choice is selected by the local Field Office VRM specialist. – Lattice towers and conductors will have non-specular qualities. – Lattice towers will be located a minimum of ¾ mile away from Key Observation Points such as roads, scenic overlooks, trails, campgrounds, navigable rivers, and other areas people tend to congregate and located against a landscape backdrop when topography allows. ▪ Night Sky – BMPs to minimize impacts to night sky including light shielding will be employed	While this APM would reduce project visual effects, substantial visual effects would remain. Therefore, this measure is reinforced with application of additional Mitigation Measures VIS-1 through VIS-4 and BLM-VIS-2, as discussed below.

The implementation of the following mitigation measures would reduce impacts on visual resources.

Mitigation Measure BLM-VIS-1 has been eliminated because the structures referenced in the measure are specific to the solar trough technology and the solar PV technology does not have infrastructure of similar dimension.

The following Air Quality and Biological Resources mitigation measures area presented in full in Section 4.2 (Air Resources) and Section 4.17 (Vegetation Resources).

- AQ-SC3, Construction Fugitive Dust Control
- AQ-SC4, Dust Plume Response Requirement
- VEG-8, Impact Avoidance and Minimization Measures
- VEG-12, Decommissioning and Reclamation Plan

VIS-1 **Surface Treatment of Project Structures and Buildings.** The project owner shall treat the surfaces of all project structures and buildings visible to the public such that (a) their colors minimize visual intrusion and contrast by blending with (matching) the existing characteristic landscape colors; (b) their colors and finishes do not create excessive glare; and (c) their colors and finishes are consistent with local policies and ordinances. The transmission line conductors shall be non-specular and non-reflective, and the insulators shall be non-reflective and non-refractive.

Following in-field consultation with the BLM Visual Resources specialist and other representatives as deemed necessary, the project owner shall submit for BLM's Authorized Officer review and approval, a specific Surface Treatment Plan that will satisfy these requirements. The treatment plan shall include:

A. A description of the overall rationale for the proposed surface treatment, including the selection of the proposed color(s) and finishes based on the characteristic landscape. Colors will be fielded tested using the actual distances from the KOPs to the proposed structures, using the proposed colors painted on representative surfaces;

B. A list of each major project structure, building, tank, pipe, and wall; the transmission line towers and/or poles; and fencing, specifying the color(s) and finish proposed for each. Colors must be identified by vendor, name, and pantone number; or according to a universal designation system;

C. One set of color brochures or color chips showing each proposed color and finish;

D. A specific schedule for completion of the treatment; and

E. A procedure to ensure proper treatment maintenance for the life of the Project. The project owner shall not specify to the vendors the treatment of any buildings or structures treated during manufacture, or perform the final treatment on any buildings or structures treated in the field, until the project owner receives notification of approval of the treatment plan by BLM's Authorized Officer. Subsequent modifications to the treatment plan are prohibited without BLM's Authorized Officer approval.

VIS-2 **Revegetation of Disturbed Soil Areas.** The project owner shall revegetate disturbed soil areas to the greatest practical extent, as described in Mitigation Measure BIO-8. In order to address specifically visual concerns, the required Closure, Revegetation and Rehabilitation Plan shall include reclamation of the area of disturbed soils used for laydown, project construction, and siting of the substation and other ancillary operation and support structures.

VIS-3 **Temporary and Permanent Exterior Lighting.** To the extent feasible, consistent with safety and security considerations, the project owner shall design and install all permanent exterior lighting and all temporary construction lighting such that (a) lamps and reflectors are not visible from beyond the project site, including any off-site security buffer areas; (b) lighting does not cause excessive reflected glare; (c) direct lighting does not illuminate the nighttime sky, except for required FAA aircraft safety lighting (which should be an on-demand, audio-visual warning system that is triggered by radar technology); (d) illumination of the Project and its immediate vicinity is minimized, and (e) the plan complies with local policies and ordinances. The project owner shall submit to BLM's Authorized Officer for review and approval and simultaneously to the County of Riverside for review and comment a lighting mitigation plan that includes the following:

A. Location and direction of light fixtures shall take the lighting mitigation requirements into account;

B. Lighting design shall consider setbacks of project features from the site boundary to aid in satisfying the lighting mitigation requirements;

C. Lighting shall incorporate fixture hoods/shielding, with light directed downward or toward the area to be illuminated;

D. Light fixtures that are visible from beyond the project boundary shall have cut-off angles that are sufficient to prevent lamps and reflectors from being visible beyond the project boundary, except where necessary for security;

E. All lighting shall be of minimum necessary brightness consistent with operational safety and security; and

F. Lights in high illumination areas not occupied on a continuous basis (such as maintenance platforms) shall have (in addition to hoods) switches, timer switches, or motion detectors so that the lights operate only when the area is occupied.

VIS-4 **Project Design.** To the extent possible, the project owner will use proper design fundamentals to reduce the visual contrast to the characteristic landscape. These include proper siting and location; reduction of visibility; repetition of form, line, color (see VIS-1) and texture of the landscape; and reduction of unnecessary disturbance. Design strategies to address these fundamentals will be based on the following factors:

- **Earthwork:** Select locations and alignments that fit into the landforms to minimize the size of cuts and fills. Avoid hauling in or hauling out of excess earth cut or fill. Avoid rounding and/or warping slopes. Retain existing rock formations, vegetation, and drainage. Tone down freshly broken rock faces with emulsions or stains. Use retaining walls to reduce the amount and extent of earthwork. Retain existing vegetation by using retaining walls or fill slopes,

reducing surface disturbance, and protecting roots from damage during excavations. Avoid soil types that generate strong color contrasts. Reduce dumping or sloughing of excess earth and rock on downhill slopes.

- **Vegetation Manipulation:** Retain as much of the existing vegetation as possible. Use existing vegetation to screen the development from public viewing. Use scalloped, irregular cleared edges to reduce line contrast. Use irregular clearing shapes to reduce form contrast. Feather and thin the edges of cleared areas and retain a representative mix of plant species and sizes.
- **Structures:** Minimize the number of structures and combine different activities in one structure. Use natural, self-weathering materials and chemical treatments on surfaces to reduce color contrast. Bury all or part of the structure. Use natural appearing forms to complement the characteristic landscape. Screen the structure from view by using natural land forms and vegetation. Reduce the line contrast created by straight edges.
- **Linear Alignments:** Use existing topography to hide induced changes associated with roads, lines, and other linear features. Select alignments that follow landscape contours. Avoid fall-line cuts and bisecting ridge tops. Hug vegetation lines and avoid open areas such as valley bottoms. Cross highway corridors and less sharp angles.
- **Reclamation and Restoration:** Reduce the amount of disturbed area and blend the disturbed areas into the characteristic landscape. Replace soil, brush, rocks, and natural debris over disturbed area. Newly introduce plant species should be of a form, color, and texture that blends with the landscape.

BLM-VIS-2 **Night Lighting.** In addition to the requirements imposed by Mitigation Measure VIS-3, the project owner shall consult with the National Park Service Night Sky Program Manager in the development of the lighting plan, and comply with stricter standards for light intensity. All permanent light sources shall be below 3,500 Kelvin color temperature (warm white) and shall have cutoff angles not to exceed 45 degrees of nadir. The use of LED lighting with a Correlated Color Temperature (CCT) above 2,700 would introduce blue light into the environment that would have negative impacts on the night skies and wildlife of that area. If LED light bulbs are used they will have a CCT of 2,700 or less. A CCT above 2,700 would increase blue light into the environment that would impact wildlife and visors and increase light pollution. All lights, temporary and permanent, are to be fully shielded such that the emission of light above the horizontal will be prevented. Prior to construction, the Applicant shall submit to the BLM and NPS Joshua Tree NP for review and approval a Lighting Mitigation Plan that includes the following:

- Specification that LPS or amber LED lighting will be emphasized, and that white lighting (metal halide) would (a) only be used when necessitated by specific work tasks, (b) not be used for dusk-to-dawn lighting, and (c) would be less than 3500 Kelvin color temperature;
- Specification and map of all lamp locations, orientations, and intensities, including security, roadway, and task lighting;

- Specification of each light fixture and each light shield;
- Total estimated outdoor lighting footprint, expressed as lumens or lumens per acre;
- Definition of the threshold for substantial contribution to light pollution in JTNP, in coordination with the Night Sky Program Manager (see below);
- Specifications on the use of portable truck-mounted lighting;
- Specification of motion sensors and other controls to be used, especially for security lighting;
- Surface treatment specification that will be employed to minimize glare and skyglow;
- Results of a Lumen Analysis (based on final lighting plans), in consultation with the NPS Night Sky Program Manager, in order to determine the extent of night lighting exposures in the surrounding NPS lands. If the lighting exposure on NPS lands exceeds the allowable threshold (which is to be determined in consultation with the NPS Night Sky Program Manager), additional control measures will be instituted to reduce the lighting exposures to levels below the action threshold; and
- Documentation that the necessary coordination with the NPS Night Sky Program Manager has occurred.

4.18.5 Residual Effects after Implementation of Mitigation Measures

Residual impacts of the Proposed Action would remain after implementation of mitigation measures due to the scale of the Project. While Mitigation Measures VIS-1 through VIS-4 would be helpful in reducing the level of contrast in form, line, color and texture for individual project features, the ability of these measures to reduce visual impacts decreases as the scale of the Project increases. Thus, very few of the identified impacts are altogether eliminated through application of the proposed measures; however, the contrast in color and texture would be substantially reduced from several of the KOPs with application of VIS-1. Further, the impact of lighting, while not eliminated, also would be reduced substantially by implementation of VIS-3 and BLM-VIS-2. However, as the angle of view increases (increased elevation of viewpoints), the project's solar field would become a more dominant and contrasting landscape feature because of the increased visibility of the total solar field and increasing contrast of the dark panels against the lighter sand, soil, rock, and vegetation of the surrounding valley floor.

4.18.6 Unavoidable Adverse Impacts

The Proposed Action would cause two adverse impacts that cannot be mitigated. As such, these impacts would be unavoidable. These are discussed under the analysis of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative, and are summarized below:

1. Visual impacts due to the general level of visual contrast of the Project in the landscape and non-conformance with Interim VRM Class III objectives (e.g., KOPs 7, 8, 10, and 11).

2. Unavoidable and adverse cumulative impacts for travelers along I-10 and dispersed recreational users in the Coxcomb, Palen, and Chuckwalla Mountains and associated wilderness.

4.18.7 CEQA Significance Thresholds and Determinations

The criteria listed below were used to determine if the Proposed Action and Alternatives would result in substantial or significant impacts on visual resources and were derived from the Environmental Checklist Form in Appendix G of the State CEQA Guidelines.

VIS-1 Would the Proposed Action have a substantial adverse effect on a scenic vista?

VIS-2 Would the Proposed Action substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

VIS-3 Would the Proposed Action substantially degrade the existing visual character or quality of the site and its surroundings?

VIS-4 Would the Proposed Action create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

VIS-1 Substantial Effect on Scenic Vista

A scenic vista is generally considered a specific viewpoint or viewing location (often an elevated overlook) that provides expansive views of a highly valued landscape for the benefit of the general public. Scenic vistas are frequently officially designated by public agencies and are often signed and accessible to the public for the express purposes of viewing and sightseeing.

Although no designated scenic vistas were identified in the study area, which is the site of the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative, panoramic and highly scenic vistas are available to backcountry recreationists that access the Joshua Tree Wilderness, Palen McCoy Wilderness, and Chuckwalla Mountains Wilderness. As shown in Figure 4.18-6A, KOP 10 Palen McCoy Wilderness Existing View, and Figure 4.18-6B, KOP 10 Palen McCoy Wilderness Visual Simulation, for the representative KOP 10 under the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative, the solar facility would be prominently visible from elevated *vantage points* in the area, and the introduction of industrial character and structural visual contrast would result in substantial adverse effects on these views. The resulting visual impact would be significant and unavoidable.

However, Mitigation Measures VIS-1 through VIS-4 (Surface Treatment of Project Structures and Buildings, Revegetation of Disturbed Soil Areas, Temporary and Permanent Exterior Lighting, and Project Design, respectively) are still required to reduce the visual impact to the extent feasible.

The No Action Alternative would not have any impacts related to Impact VIS-1 since under this alternative, the Proposed Action would not be constructed.

VIS-2 Scenic Resources within a State Scenic Highway

There are no State Scenic Highways in the immediate project vicinity, so no impacts will occur to scenic resources within a state scenic highway.

The No Action Alternative would not have any impacts related to Impact VIS-2 since under this alternative, the Proposed Action would not be constructed.

Since no impacts have been defined for Impact VIS-2, no mitigation measures are required.

VIS-3 Existing Visual Character or Quality of the Site

As previously discussed, the Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative would introduce a prominent built facility with considerable industrial character into an existing landscape presently absent of such features. This would cause a substantial degradation of the existing visual character or quality of the site and its surrounding landscape when viewed from KOPs 7, 8, 10, and 11 (which included views from adjacent wilderness). The resulting visual impacts would be significant and unavoidable.

However, Mitigation Measures VIS-1 through VIS-4 (Surface Treatment of Project Structures and Buildings, Revegetation of Disturbed Soil Areas, Temporary and Permanent Exterior Lighting, and Project Design, respectively) are still required to reduce the visual impact to the extent feasible.

Some close-proximity at-grade views such as KOP 9 on westbound I-10 would not experience substantial degradation of the existing visual character or quality of the landscape because of the presence of intervening screening vegetation. More distant at-grade views, such as KOP 2 would also not experience substantial adverse visual effects because of the apparent small scale of the project elements at those considerable viewing distances. The resulting visual impact in those circumstances would be adverse, but less than significant.

The No Action Alternative would not have any impacts related to Impact VIS-3 since under this alternative, the Proposed Action would not be constructed.

VIS-4 Substantial Light or Glare

JTNP is known throughout the National Park System for its significant Dark Sky resource. To serve a substantial public interest in Dark Sky observation, JTNP offers a variety of Night Sky Programs. In the immediate project region, Dark Sky visitors access the east end of the Pinto Basin at an access gate at the north end of Chuckwalla Valley. Because any light source in the desert contributes to ambient light pollution and all light sources are adversely cumulative in terms of the impact on human dark adaptation and the dwindling availability of Dark Sky observation areas, it is essential that substantial steps be taken to ensure that additional night sky light pollution does not occur from implementation of the Project or action alternatives.

The Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative have the potential to introduce a new source of substantial light that would adversely affect nighttime views in the area. The resulting visual impact would be significant, but it is mitigable with strict and effective implementation of Mitigation Measure VIS-3 (Temporary and Permanent Exterior Lighting) and Mitigation Measure BLM-VIS-2 (Night Lighting). Overall, the impacts from light or glare from the Project or action alternatives is less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact VIS-4 since under this alternative, the Proposed Action and action alternatives would not be constructed.

Cumulative Impacts

The Proposed Action, Reduced Footprint Alternative, or Avoidance Alternative in combination with the 16 local energy projects or eight regional energy projects would result in visual effects created from airborne dust generation, nighttime construction lighting, staging area disturbances, and batch plant operations. These impacts would range from Significant and Unmitigable to Less than Significant depending on the number of construction projects concurrently visible and the viewing circumstances (long-term static views or mobile, brief, and temporary views). The Significant and Unmitigable cumulative construction impacts would occur where long-term visual effects would be visible to sensitive viewing populations.

Effective implementation of Mitigation Measures VIS-3 (Temporary and Permanent Exterior Lighting), BLM-VIS-2 (Night Lighting), AQ-SC-3 (Construction Fugitive Dust Control), AQ-SC-4 (Dust Plume Response Requirement), and BIO-8 (Impact Avoidance and Minimization Measures) would reduce the severity of the cumulative construction visual effects, though the significant and unmitigable visual effects would not be reduced to levels that would be less than significant. However, the cumulative impact from airborne dust generation, nighttime construction lighting, staging area disturbances, and batch plant operations would remain significant and unavoidable.

The Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative also have the potential to result in significant cumulative operational visual impacts when viewed by sensitive viewing populations along I-10 and in the surrounding mountains and wilderness. Impacts would result from the introduction of substantial visual contrast associated with discordant geometric patterns in the landscape; large-scale, built facilities with prominent industrial character; un-natural lines of demarcation in the valley floor landscape; and inconsistent color contrasts.

Effective implementation of Mitigation Measures VIS-1 (Surface Treatment of Project Structures and Buildings), VIS-2 (Revegetation of Disturbed Soil Areas), VIS-4 (Project Design), and BIO-8 (Impact Avoidance and Minimization Measures) would reduce the severity of the cumulative operational visual effects, though the significant and unmitigable visual effects would not be reduced to levels that would be less than significant. However, the cumulative impact to sensitive viewing populations along I-10 and in the surrounding mountains and wilderness would remain significant and unavoidable.

The Proposed Action, Reduced Footprint Alternative, and Avoidance Alternative also have the potential to result in significant cumulative night lighting impacts on night sky visibility in the Chuckwalla Valley and for users of nearby designated wilderness and JTNP.

Effective implementation of Mitigation Measures VIS-3 (Temporary and Permanent Exterior Lighting) and BLM-VIS-2 (Night Lighting) would reduce the severity of the cumulative night lighting effects, though the significant and unmitigable visual effects would not be reduced to levels that would be less than significant. However, the cumulative impact to night sky visibility in the Chuckwalla Valley and for users of nearby designated wilderness and JTNP would remain significant and unavoidable.

4.19 Water Resources

4.19.1 Impact Assessment Methodology

This section analyzes potential direct, indirect and cumulative impacts of the Proposed Action and alternatives on water resources, including the Project's potential to adversely affect groundwater supplies, alter geomorphic features/processes, modify drainage and flooding conditions, induce erosion and sedimentation, and degrade water quality. The analysis also considers the potential for incremental impacts of the Project to combine with impacts of other projects and activities to adversely affect water resources. Mitigation measures to avoid or reduce potential impacts are identified (Section 4.19.4), and the potential for residual impacts is evaluated. No unavoidable adverse effects are anticipated.

This analysis is based on 2011 PA/FEIS for the Palen Solar Power Project (PSPP), Section 4.19 (Water Resources, pages 4.19-1 through 4.19-28) and the California Energy Commission 2010 RSA Section C.9 (Soil and Water Resources, pages C.9-1 through C.9-141) (CEC, 2010). Groundwater impacts are based in part on the 2016 Water Supply Assessment (Aspen, 2016). The information presented in these documents is repeated or summarized where appropriate, with the impact analysis updated with new information where applicable to the Proposed Action and revised project description. In addition to changed circumstances, the revised project description and new information developed outside the immediate context of the Project, new information updates since 2010 and 2011 are also drawn, where applicable, from the 2013 Draft SEIS for the Palen Solar Electric Generating System (PSEGS) and from the PSEGS 2013 Final Staff Assessment and 2014 Revised Presiding Member's Proposed Decision.

CEQA levels of significance are addressed in Section 4.19.7. Specific CEQA thresholds of significance are numbered WR-1 to WR-10 in that section. The analysis discussion in Section 4.19.2 below indicates which CEQA threshold is applicable, and Section 4.19.7 gives a summary plus additional discussion of CEQA thresholds not discussed in Section 4.19.2.

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.19.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.19.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. Thirteen APMs are proposed for water resources (APM-29 through APM-41) and one APM proposed for sand transport corridor (APM-49) and are considered in the evaluation of impacts.

4.19.2 Direct and Indirect Effects

This section addresses the direct and indirect impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The Proposed Action will convert 3,381 acres of undeveloped land (within a 4,221 acre right-of-way requested by the Applicant) in the Chuckwalla Valley of Riverside County into a solar photovoltaic (PV) project, with associated access roads, parking, an on-site substation, and a gen-tie line. The detailed project description is provided in Chapter 2. The baseline condition for water resources is described in Section 3.19. The direct and indirect effects of those actions relevant to construction, operation and decommissioning of the Project are presented in the sections below.

Groundwater Impacts

Construction water use is expected to be 497 to 700 acre-feet per year (afy) during the anticipated 30-month construction period, for a total of 1,242 to 1,750 acre-feet.

The average total annual water usage during operation is estimated to be 15 to 41 acre-feet per year (afy), which corresponds to an average constant flow rate ranging from about 9.3 to 25.4 gallons per minute (gpm). Water would be primarily for panel washing and general maintenance activities. Usage rates could vary during the year and may be higher in the summer months. Equipment sizing would be consistent with peak daily rates to ensure adequate design margin.

The Project's water needs would be met by use of groundwater pumped from wells on the plant site. Bottled drinking water would provide potable water. A permanent, 10,000-gallon above-ground water storage tank would be used for O&M tasks and facilities, including on-site fire-fighting. Domestic wastewater would be treated and disposed at the site using a septic disposal system consisting of septic tanks and leach field.

All non-potable water needs would be met by groundwater from the Chuckwalla Valley Groundwater Basin (CVGB). There are two planned scenarios for the annual supply of construction water.

- **Water Supply Scenario 1:** Up to 30% of construction water would be purchased from a local water supplier (Riverside County Service Area (CSA) 51). The remaining 70% or more, up to 490 afy, would come from up to 7 onsite wells on the Palen Solar Project property. All operational water would be produced from the same on-site wells. On-site wells constructed for the purposes of providing construction water would be used for construction and only two wells during operations. The remaining construction wells, if any, would be decommissioned and capped per applicable regulations and as approved by the BLM.

  The Applicant would enter into a water supply agreement with Riverside County to purchase water from the CSA 51 groundwater production wells in Lake Tamarisk, at Desert Center, approximately 10 miles west of the PSEGS project. Specifically, the Applicant would purchase up to 210 afy during the 30-month construction period from CSA 51. The water would be transported from Lake Tamarisk to the project site by truck.

- **Water Supply Scenario 2:** All construction and operational water would be supplied from up to 10 onsite wells. Water trucks would transport water from the onsite wells utilizing the internal roads within the project boundary.

Operational needs would be met by groundwater wells on the site.

The use of up to 1,750 acre-feet of water for construction and 41 acre-feet of water during operation represents an extraction of approximately 2,878 acre-feet total of groundwater from the CVGB over the 30-year life of the Project. As shown in Section 3.19, by applying one averaged recharge rate the CVGB currently may have an estimated surplus of approximately 2,390 acre-feet per year (afy), meaning all known estimated inflows minus all known estimated outflows and current extractions for the basin is approximately 2,390 afy. The CVGB currently has sufficient groundwater inflow to supply all current extraction needs, plus those of the Proposed Action during construction and operation, without inducing a deficit in overall supply.

Using a much more conservative recharge rate suggested by NPS, (See Table 3.19-4) the CVGB may be in overdraft. In this case, the Project would contribute to this overdraft by about 26% during construction and 0.6% during operation.

CSA 51 has two groundwater wells that pump at rates of 1,100 gallons per minute (gpm) and 1,200-1,500 gpm, respectively, with water stored temporarily in Lake Tamarisk. Both wells typically operate on a 10-hour workday, five days a week. The Water Supply Assessment (Appendix G) determined that any impact of drawdown on CSA 51's capacity to supply the Project in Water Supply Scenario 1 would be negligible for the reason that CSA 51 has never had a problem continuing to pump despite some drawdown, even when pumping large volumes. Surrounding landowners recall that localized drawdown effects have always been minimal and have rebounded within a few months (Aspen, 2016).

Under Scenario 2, all construction water (1,750 acre-feet) would come from onsite wells. This could cause a temporary local drawdown effect similar to what is expected from the CSA-51 wells. Since this water use would decline significantly after construction, the drawdown is expected to rebound as has been the case with CSA-51.

In summary, based upon the initial average recharge rate the Proposed Action water use would have an impact on basin balance in the CVGB, but pumping for the Project would not exceed net average recharge to the basin, nor would it adversely affect the ability of CSA 51 to supply existing customers. If the NPS recharge rates are valid, the entire basin is already in overdraft, to which the Proposed Action would contribute a small amount, and all water users, including CSA 51 could be affected. APM-36, 37, 39, and 40 are incorporated into the Project and would reduce impacts to groundwater. Mitigation Measures WR-2, WR-3, WR-7, WR-8, WR-9 and WR-10 are required, supplementing the APMs, to reduce these impacts.

Climate change and other uncertainties could influence the relative magnitude of the Proposed Action impact on the groundwater basin. If climate change results in warmer, drier conditions in this area, the recharge rate from precipitation could go down, and the demand for water go up, especially for agriculture, possibly resulting in conditions that could put the CVGB in a baseline deficit condition. In such a case, the Project would contribute to the deficit.

Groundwater Drawdown Impacts

Project-related groundwater drawdown could have an impact on existing water wells in the basin, lower the water table in areas where deep-rooted phreatophytes are prevalent or affect

phreatophytes and halophytes, affect surface water features including springs, and/or induce permanent ground subsidence. There are also potential effects to Colorado River water caused by project-related groundwater pumping (BLM, 2011).

Drawdown imposed by a well on another nearby well can have adverse effects. This is referred to as interference drawdown or well interference. Specific potential adverse effects include (BLM, 2011):

- Interference drawdown can result in the water level of an aquifer being drawn down below the screen of the well (i.e., the well goes dry);
- Interference drawdown can result in the water level of an aquifer being drawn down to a point where the affected well's capacity to pump water is decreased and the well can no longer produce the amount of water that is needed for a particular use, or the well is at risk of becoming damaged and unusable over time due to exposure of the well's screen above the water table and resulting corrosion;
- Interference drawdown can result in the water level in the affected well being drawn down to near the intake of the well's pump, requiring lowering of the pump intake in order for the well to remain operational; and/or,
- Interference drawdown can cause a decrease in groundwater level in the affected well such that the well and pump can continue to operate and produce adequate amounts of water, but pumping must occur at either greater frequency or duration, and/or water must be lifted to a greater height, resulting in greater operational and maintenance costs.

The extent and type of well interference experienced by an affected well is dependent on hydrogeologic conditions in the aquifer as well as the characteristics of the affected well. These include (BLM, 2011):

- The amount of interference drawdown that is applied (which varies with the distance of the impacted well from the project well(s);
- The depth and screened interval of the affected well;
- The thickness of saturated sediments penetrated by the affected well;
- Local variations in the transmissivity of the saturated sediments in which the affected well is completed, if any;
- The condition and efficiency of the affected well;
- The affected well's pump specifications, including its rating curve, the depth at which the pump intake is set, and the resulting pumping water level in the well during operation; and,
- The minimum required water production rate of the well.

The PSPP Final EIS presented an analysis using a project water use rate that was more than seven times the Proposed Action water use. The results showed a predicted water table drawdown associated with PSPP of approximately 57 feet in the area of the pumping well. The area where drawdown exceeded 1 foot was limited to approximately 2 to 3 miles of the PSPP pumping area. It was concluded that it is unlikely groundwater pumping for the Project would cause any nearby wells to go dry or be severely impaired or rendered unusable by declining groundwater levels.

However, groundwater levels would decline and could affect nearby wells (BLM, 2011). The proposed water use, being much less than analyzed in the FEIS, is expected to have less of an impact.

Phreatophyte trees (such as mesquite, ironwood, and palo verde) have deep root systems that can extend tens of feet below the ground surface to the underlying water table. In addition, wet playas can harbor halophyte plant communities that depend on a shallow water table for their moisture. Lowering of the water table below the root depth of these plants could result in stress or death. The nearest potential wetland or halophyte communities would be near Palen Dry Lake, approximately 3-6 miles from the project site. The Proposed Action is not anticipated to substantially alter water levels due to groundwater production beneath this area. A preliminary estimate of the groundwater level decline in the Final EIS for PSPP, which used a much higher operational groundwater use estimate, indicated approximately 0.2 to 0.6 feet in this area at the end of 33 years of operation (BLM, 2011). The Proposed Action would have a reduced effect due to the reduced operational water needs.

The nearest spring to the Project is Corn Spring, which is located 5 to 6 miles southwest of the project site, in the center of the Chuckwalla Mountains, at an elevation of approximately 1,600 feet. Corn Spring appears to derive its water from precipitation falling onto the Chuckwalla Mountains, and movement of groundwater under pressure along an historic fault that bisects the mountains. Other springs, including McCoy Spring and Chuckwalla Spring, are located at a greater distance, 19 miles and 16 miles from the Project, respectively. Other surface water discharge/outfall sites are located at least 8 miles from the project site. At the location of the nearest groundwater-dependent surface water feature (Corn Spring), drawdown would be negligible, and is not anticipated to affect the spring. In general, surface waters including Corn Spring and other springs in the vicinity of the Project are not expected to be affected by proposed groundwater pumping, based on the distance from these features, as well as the associated hydrogeologic and physiographic conditions in the vicinity of the Proposed Action (BLM, 2011).

Coxcomb Wash, located approximately 8 miles northwest of the project site, is an ephemeral dry wash that flows southeastward from the Coxcomb Mountains. This surface water feature is not dependent on groundwater, and therefore the extraction of groundwater from the project site would not affect the flow of water in Coxcomb Wash (BLM, 2011).

Tinajas located on site or in proximity to the Project are areas that retain stormwater flows at the surface. Tinajas are not dependent on groundwater, and therefore would not be affected by any change in groundwater levels that would result from implementation of the Project. Similarly, wildlife water guzzlers are man-made structures designed to retain stormwater for use by small and large game. These would not be affected by changes in groundwater levels (BLM, 2011).

The Ford Dry Lake playa is located approximately 8 miles from the project site, whereas the southern tip of Palen Dry Lake is located at least 3 miles northeast of the project site. For the PSPP with an assumed 300 afy of operational water use, the potential drawdown at Palen Dry Lake, a wet playa, would be on the order of several inches or less. Drawdown at Ford Dry Lake would be minor to negligible (BLM, 2011). Because the Proposed Action would require up to 41 afy during operations, it would produce a smaller drawdown.

Ground subsidence can occur as a result of water level decline in aquifer systems. When the fluid pressure in an aquifer is reduced as a result of changes in the groundwater level, a shift in the balance of support for the overlying materials causes the "skeleton" of the aquifer system to deform slightly. Reversible deformation occurs in all aquifer systems as a result of the cyclical rise and fall of groundwater levels associated with short and longer term climatic cycles. Permanent ground subsidence can occur when pore water pressures in the aquifer fall below their lowest historical point, and the particles in the aquifer skeleton are permanently rearranged and compressed. Soils particularly susceptible to such consolidation and subsidence include compressible clays in a confined aquifer system. Compressible clays are not anticipated on site in a thickness sufficient to result in subsidence as a result of groundwater drawdown under the Project. This type of deformation is most prevalent when confined alluvial aquifer systems having thick compressible clay layers are overdrafted.

Based on the geologic/sedimentary characteristics of the CVGB, and on a lack of measured subsidence during previous, historic drawdown events, the potential for subsidence from groundwater level declines is considered remote (BLM, 2011). APM-37 would require a groundwater monitoring and mitigation plan, but makes no reference to ground subsidence. Mitigation Measure WR-8 is required to supplement APM-37 and monitor ground subsidence and develop an action plan should it occur.

There is a concern that project-related groundwater use could affect the adjacent Palo Verde Mesa Groundwater Basin (PVMGB) by inducing flows from the Colorado River into that basin. Any resulting use of Colorado River water without an entitlement would be illegal. However, given the distance of the Project from the Colorado River, and the pumping elevation, the Project would not result in direct impacts to the PVMGB, and wells drawing groundwater for project use would not induce flow from the Colorado River (BLM, 2011). Nonetheless, because uncertainty regarding an induced flow from the Colorado River, APM-40 calls for evaluation and mitigation of impacts to the PVMGB. Mitigation Measures WR-7 and WR-9 are similar to APM-40 but would supplement it by suppling additional details related mainly to analysis and specifics of potential mitigation and are required to reduce the possibility of impacts related to Colorado River water.

Groundwater Quality Impacts

Groundwater quality impacts could occur during construction if contaminated or hazardous materials used during construction were to be released and migrate to the groundwater table. With adherence to a hazardous material management plan during construction, along with adherence to the conditions of an NPDES General Permit for Construction Activities, the potential for such impacts to groundwater quality are low.

Project-related extraction of groundwater could induce vertical flow of high saline groundwater from beneath Palen Dry Lake playa to lower aquifers located beneath the project site and being used for water production. No significant differential in groundwater quality has been identified beneath the Project. However, given the possibility that there is shallow groundwater below the playa and the playa serves as a point of discharge of groundwater, it is reasonable to presume that there could be high concentrations of TDS below the playa. Using the estimated values of hydraulic conductivity, effective porosity, gradient and distance, and the locations of high saline

groundwater beneath the Palen Dry Lake playa along with the anticipated operational water use, calculations indicate that it would take between about 43 years to 4,424 years for groundwater to flow from beneath Palen Dry Lake to the Project (CEC, 2010). This calculation assumed a higher level of operational water use (300 afy) than the amount anticipated for the Proposed Action (up to 41 afy). Given that there are likely low permeability sediments present beneath Palen Dry Lake and that the analysis did not take into consideration retardation (associated with low permeability sediments), dispersion or dilution and/or interference from other producers, it is unlikely that vertical migration of poor quality water would degrade higher-quality portions of the aquifer (CEC, 2010).

The Project would produce sanitary wastewater from the O&M building, treated and disposed at the site using a septic disposal system consisting of septic tanks and leach field. The proposed septic system would be required to meet minimum federal (U.S. EPA), state and local (Riverside County Department of Environmental Health) requirements for septic system design, including requirements for percolation and vertical distance from the groundwater table. Further, the Riverside County Department of Environmental Health requires a setback of 100 feet between this type of system and the nearest groundwater well. The use and application of septic fields is an established practice as a method of wastewater treatment. The proposed septic system is not expected to result in substantial degradation of the groundwater underlying the project site, but Mitigation Measure WR-11 (Septic System Design Details) would allow BLM and the County to evaluate the design and ensure that it is in line with County and EPA regulations and protective of water quality.

APMs 29, 30, 31, 32, and 38 are intended to reduce impacts to water quality by preventing toxic substances from leaching into the soil, preparation of an emergency response plan, reducing the use of side casting in road construction, protection of wetlands, and compliance with wastewater treatment regulations. Mitigation Measure WR-10 (Groundwater Quality Monitoring and Reporting Plan) is required to supplement the APMs and further reduce impacts to groundwater quality.

Surface Water Erosion Impacts

Earthwork for project construction would require the use of heavy machinery for vegetation grubbing, grading, and installation of roads, pipelines, generation facilities, transmission facilities, administration buildings, the solar field, and other facilities. Construction of these facilities would involve the use of bulldozers, graders, trucks, and various other types of heavy equipment, and would involve changes to on site topography. These activities would loosen existing surface soils and sediments, increasing the potential for erosion during storm events, along with associated effects such as increased downstream sediment yields from on-site disturbed areas. Increased impervious areas could also lead to erosion by increasing the rate and frequency of runoff.

Grading effects that could lead to soil disturbance will be minimized by the proposed grading plan, which will minimize the required volume of earth movement, as described in Chapter 2. Site grading would be limited to the major access roads, the inverter pad locations, and the ancillary facilities in the northwest corner and laydown area. The site would maintain sheet flow of stormwater runoff where possible, with water exiting the site in existing natural contours. Impervious groundcover would be limited to the PV panel foundations, inverter and transmission

equipment pads, some access roads, a small parking area, the O&M facility and the substation. Natural sheet flow and infiltration would be maintained throughout the photovoltaic panel field. Excavation would be limited to the trenches for the electrical conductors that connect the PV modules and the inverters to the substation.

The Applicant proposes control structures such as small earthen berms and swales to protect the solar block installations. Discharge from these berms, if needed, would be into existing intermittent streams on the property. Intermittent streams would be defined and protected within the project area. Rip rap would be installed at the discharge point to these streams within the project boundary to reduce flow energy and allow water absorption. If required by final engineering design, retention basins may be constructed allow no increase in volume and no concentration of water leaving the project area.

Erosion protection management measures would be required by adherence to a SWPPP in compliance with the Clean Water Act and the California General Construction Permit (See Section 3.19.1). Compliance with these measures is generally sufficient to reduce erosion impacts to a minimum. APM-49 would require the Project to maintain Aeolian sediment sorting and transport to downwind deposition zones for any facilities that alter site hydrology. A Drainage Erosion and Sedimentation Control Plan (DESCP) is proposed in Mitigation Measure WR-1 to further address potential project-related water erosion impacts. This plan would include applicable measures, such as best management practices (BMPs), to identify, avoid/reduce, monitor, and document potential erosion and sedimentation effects from the Project. Mitigation Measures WR-4 requires a drainage report and plans and WR-5 requires a drainage maintenance program are also required to further reduce impacts.

Surface Water Hydrology Impacts

There is a potential for the Project to increase the magnitude and frequency of runoff rates through the construction of impervious areas and by altering the ground surface characteristics through grading and removal of vegetation. Impervious areas will be minimal (approximately 35 acres within the 3,381 acres of ground disturbance). Additionally, the Project as proposed would leave drainage patterns relatively intact, leave vegetation below 18 inches in height in place, and revegetate temporarily disturbed areas. Therefore, the increase in runoff is expected to be minimal, though an impact potential remains. Depending on final engineering analysis of post-construction hydrology, retention basins may be constructed to allow no increase in volume and no concentration of water leaving the project area.

A drainage report was prepared in 2009 for a previous project on this same site (AECOM, 2009). This report would need to be updated to reflect updated hydrology conditions and the current site layout and grading plan. Mitigation Measures WR-1, WR-4 and WR-5 are required to counteract adverse hydrology effects.

Flood Impacts

As described in Section 3.19.2.3 (Surface Water), much of the project area is subject to flooding originating mainly from the Corn Springs Wash in the form of unconsolidated small desert channels. Proper design of flood prevention measures would require an estimation of flow quantities, depths, and velocities throughout the property. A detailed analysis of the extent and

hydraulic characteristics of flows to allow for a complete assessment of the flooding characteristics of the site has not been provided. A general qualitative assessment is provided in Section 3.19.

The site's final grade would coincide with the prior grade such that stormwater from within the PV field would maintain sheet flow and exit the site in existing desert drainage areas. Preservation of the existing drainage pattern will contribute to the reduction of impacts to the site and to adjacent property. Some stormwater conveyance features and BMPs such as berms, culverts, and riprap protection will be installed at specific areas to protect project features such as the substation, access roads, and the operations and maintenance building.

Many of the solar panels will be in or near small channels. There is a potential for the Project itself to be subject to flood damage from flooding in these channels, and to cause local diversions of flood flows that could affect other property such as the date palm farm west of the Project. Placement of solar panels, structures, and culverts in the flow path can generate local scour and undercutting, and these structures can be damaged during large flow events, or divert flows to the detriment of other property. The panels themselves would be situated high enough that it is unlikely flood waters would reach them, resulting in little potential damage except from toppling due to the effects of scour. Mitigation Measures WR-4 and WR-5 are required to reduce adverse flooding effects.

The proposed security fence could have the effect of impeding or redirecting flood flows through plugging of fence openings by debris, possibly resulting in diversions, temporary back-up ponding, or collapse of the fence.

The electrical substation and operations and maintenance building could be subject to the effects of sheet flooding which enter these facilities, resulting in flood damage and water quality impacts. Control structures such as small earthen berms and swales would likely be used to protect the solar block installations. Discharge from these berms, if needed, would be into existing intermittent streams documented on the property. APMs 32 and 34 require compliance with Executive Order 11988 requiring federal agencies to avoid adverse impacts associated with occupation of floodplains, development of a drainage report, and avoidance of the floodplain where possible. Mitigation Measures WR-1, WR-4, and WR-5 are required to further reduce these impacts through development of a Drainage Erosion and Sedimentation Control Plan, preparation of a drainage report (expanded in detail from APM-34), and developing a drainage maintenance program.

Surface Water Quality Impacts

Construction of the Project would require excavation and grading for the solar panels, access roads, buildings, the substation, and other features. Disturbance of soil during construction could result in soil erosion and lowered water quality through increased turbidity and sediment deposition into local streams. Downstream beneficial uses (see Section 3.19.2.4, Beneficial Uses) could be adversely affected through violation of RWQCB water quality standards and objectives for suspended solids, total dissolved solids, sediment and turbidity.

Accidental spills or disposal of harmful materials used during construction could wash into and pollute surface waters or groundwater. Materials that could contaminate the construction area or spill or leak include lead-based paint flakes, diesel fuel, gasoline, lubrication oil, cement slurry,

hydraulic fluid, antifreeze, transmission fluid, lubricating grease, and other fluids. Downstream beneficial uses could be adversely affected through violation of RWQCB water quality objectives for toxicity and chemical constituents.

The dry nature of most of the surface streams is such that should material spills occur during construction, these would be cleaned up prior to water being contaminated, following the requirements of the SWPPP. Groundwater is well below the maximum depth of excavation, resulting in little likelihood that groundwater could be affected during construction.

Development and adherence to an SWPPP in conformance with the California Construction General Permit (See Section 3.19.1) will require best management practices to prevent and control erosion and siltation during construction, prevent, contain and mitigate accidental spills during construction, and prevent violation of water quality objectives or damaging beneficial uses. Compliance with Sections 401 and 404 of the Clean Water Act will also minimize this impact.

Potential threats to surface water quality during operation and maintenance activities include potential increases in erosion and associated sediment loads to adjacent washes, and accidental spills of hydrocarbon fuels, greases and other materials associated with operation of equipment on site. These impacts would be mitigated by compliance with the California Industrial Storm Water General Permit described in Section 3.19.1.

Decommissioning of the Project is expected to result in adverse impacts related to water resources similar to construction impacts: Work could result in potential increases in sediment loads to adjacent streams and washes; and/or accidental spills of hydrocarbon fuels and greases and other materials associated with motorized equipment and construction work.

APM-29 (prevention of toxic substances from leaching into the soil), APM-30 (emergency response plan), and APM-31 (side casting to be avoided) are intended to reduce impacts to water quality. Mitigation Measures WR-1 (Drainage Erosion and Sedimentation Control Plan), WR-4 (Drainage Report), WR-5 (Drainage Maintenance Plan), and WR-6 (Closure and Decommissioning Plan) are required to further reduce surface water quality impacts.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would avoid placing infrastructure in the central wash (area defined as QB in Figure 3.19-6 in Appendix A) that crosses the site from southwest to northeast and would leave an opening of between 1,750 feet and 2,300 feet between two separate solar fields. It leaves a path for the unobstructed passage of the bulk of the flows from this wash. All other project features, including water use, would be the same as for the Proposed Action.

The impacts of Alternative 1 are the same as those for the Proposed Action for all areas (groundwater, surface water, flooding and erosion, and water quality). For the areas of surface water erosion, flooding, and possibly surface water hydrology and surface water quality, impacts would be reduced by about one fourth in magnitude due to the avoidance of the central wash and the overall smaller area of disturbance.

The two remaining main washes crossing the Project (areas defined as QA and QC in Figure 3.19-6) would not be avoided and impacts related to surface water erosion, flooding, hydrology

and water quality for those areas would be as described for the Proposed Action. The open corridor for the central wash would likely be sufficient for conveyance of all flows reaching it, but due to the braided nature of the washes in this area, some braids are likely to extend outside of the corridor and into the developed solar array, meaning there would likely still be some erosion, flooding, hydrology and water quality impacts associated with the central wash.

Mitigation Measures WR-1 through WR-11 would also apply to Alternative 1.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative is similar to Alternative 1, but would limit the area where development of a solar project could occur. The gap for the central wash would be wider, and development would not extend as far to the northeast. Water use for Alternative 2 is not known, but is conservatively assumed, based on the much smaller project footprint, to be about half the water use of the Proposed Action.

Additionally, the alternative would require the implementation of the following Conservation and Management Actions:

- LUPA SW-23, requiring a Water Supply Assessment with detailed requirement in addition to the baseline water budget such as an estimate of the total cone of depression considering cumulative drawdown, the potential to cause subsidence and loss of aquifer storage, and potentially additional field work such as an aquifer test.
- LUPA-SW-26, requiring groundwater pumping mitigation if groundwater monitoring data indicate impacts on water-dependent resources that exceed those anticipated and otherwise mitigated for in the NEPA analysis and ROD even if the basin's perennial yield is not exceeded. It may also require a contribution to basin-wide groundwater monitoring networks.
- LUPA-SW-17, stating that an activity's groundwater extraction shall not contribute to exceeding the estimated perennial yield for the basin in which the extraction is taking place.

The descriptions for Alternative 2 are the same as those for the Proposed Action for all areas (groundwater, surface water, flooding and erosion, and water quality) with the following exceptions:

- Based on the project footprint, water use would likely be about half the use of the Proposed Action, resulting in a reduced groundwater impact. Alternative 2 would use about 7.5 to 20.5 afy water for operation, and about 249 to 350 afy for construction. As indicated in Section 4.19.2, the water use of the Proposed Action would not exceed net average recharge to the CVGB, nor would it adversely affect the ability of CSA 51 to supply water. The reduced water use of Alternative 2 would have about half the negligible groundwater impact of the Proposed Action.
- Surface water erosion impacts, flooding impacts, and possibly surface water hydrology and quality impacts, would be as described for the Proposed Action but reduced substantially due to the avoidance of the central and eastern washes and the reduction in project areas. The central wash and eastern wash (QB and QC in Figure 3.19-6) would be nearly completely avoided, and the western wash (QA in Figure 3.19-6) would be partially avoided. The proposed open corridors for the central and eastern washes would likely be sufficient for conveyance of all

flows reaching them, but due to the braided nature of the washes in this area, some braids could extend outside of the corridors and into the developed solar array, meaning there would likely still be some erosion, flooding, hydrology and water quality impacts associated with the central and eastern washes. Impacts associated with the western wash would be reduced in Alternative 2. Mitigation Measures WR-1 through WR-11 would also apply to Alternative 2.

CMA LUPA-SW-23 would require a Water Supply Assessment with a numerical groundwater model that would provide a more comprehensive baseline for the CVGB, which would in turn, be used in the analysis of the Project. The Proposed Action WSA was designed to comply with CEQA requirements and does not include numerical groundwater modeling. Mitigation Measure WR-3 requires a groundwater model that would be used to support a Groundwater Level Monitoring, Mitigation, and Reporting Plan for use during construction and operations.

Additionally, Mitigation Measure WR-3 requires groundwater pumping monitoring and adjustments or compensation if the monitoring indicates this is necessary. This would be similar to CMA LUPA-SW-26. However, the CMA would potentially require a contribution to a basin-wide monitoring network that would further provide information regarding the CVGB. The effects of the Avoidance Alternative would be similar to those of the Proposed Action with implementation of the mitigation measure.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.19.3 Cumulative Effects

Geographic Scope

Impacts resulting from construction, operation, maintenance and decommissioning of the Project could result in a cumulative effect on hydrologic resources with other past, present, or reasonably foreseeable future actions. The geographic scope of the cumulative effects analysis for hydrologic resources consists of the CVGB, where various project impacts to groundwater could be additive, synergistic or countervailing, and, for surface waters, the area within the watershed boundary. Potential cumulative effects on hydrologic resources could occur at any point during the construction, operation and maintenance, or decommissioning of the Project. Table 4.19-1 lists projects in the cumulative scenario as well as the anticipated water use associated with each.

Most of these projects have, are, or would be required to undergo their own independent environmental review under NEPA. Even if the activities described in Table 4.19-1 have not yet completed the required environmental review processes, they are considered in this cumulative impacts analysis as reasonably foreseeable projects.

Construction of the Project is expected to result in short-term adverse impacts. It is expected that some of the cumulative projects described above that are not yet built may be under construction the same time as the Project. In addition, it is expected that other cumulative projects may be operational at the same time as the Project. As a result, there could be substantial long-term cumulative impacts during the construction and operation of these projects related to hydrologic water resources.

Table 4.19-1. Cumulative Projects

Project Name	Construction Start (year)	Construction Duration (years)	Annual Construction Water Use (afy)	Annual Operational Water Use (afy)
Palen Solar Project	2018[1]	2.5	700	41
First Solar Desert Sunlight Solar Farm	Completed	2.2	600–650	0.3
Red Bluff Substation	Completed	2.2	150	0
Gen-tie line	Completed	1	6.25	0
Devers–Palo Verde 2 Transmission Line Project	Completed	3	4	0
Colorado River Substation Expansion	Completed	2	66–215	0
Blythe Energy Project Transmission Line	Completed	2	4	0
Desert Southwest Transmission Line	2018[1]	2	0.6	0
Eagle Crest Pumped Storage Project	2019[2]	4	4,456[4]	2,050[4]
Genesis Solar Energy Project	Completed	3	616–1,368	218[5]
Blythe Energy Transmission Line	Completed	—	2	0
Desert SW Transmission	2018[1]	—	0.3	0
Desert Harvest Solar PV Project	2017[3]	2	400-500	26-39
DC 50 Solar Project (450 acres) (50 MW)[6]	2019[9]	1	100	2.5
SunEdison Origination3, LLC (1,800 acres) (250 MW – calculated)[6]	2019[9]	2	275[7]	12.5
First Solar Development, LLC (3,500 acres) (500 MW – calculated)[6]	2019[9]	2.5	440[8]	25
SunPower Project (2,000 acres) (up to 400 MW ac)[6]	2019[9]	2 (between 2019 and 2021)	440	20

1 - Actual projected start November 2017. January 1, 2018 is used for this analysis.

2 - CEC, 2015

3 - EA, 2016

4 - BLM Estimate (FERC, 2014). Of this amount, 600 afy is expected to seep back into the groundwater (ECEC, 2008), but would be pumped back out and used.

5 - BLM (2010). Genesis is a completed project. This amount is included in the baseline analysis.

6 – The power production information provided to the BLM does not include the level of detail required for these four projects. Where necessary, MW have been calculated for the projects using the DRECP assumption of 7 acres per megawatt. Additionally, assumptions were made regarding water use for construction and operations, as well as the construction duration. The water use assumptions were taken from Sandia (2013). For California, this report calculated 2.2 acre-feet per megawatt for construction and 0.05 acre-feet per megawatt per year for operations.

7 - Using the assumptions stated above, a 250 MW project would require an estimated 550 af total for construction, assuming a 2-year construction timeframe, this would require 275 afy.

8 - Using the assumptions stated above, a 500 MW project would require an estimated 1,000 af total for construction. Assuming a 2.5-year construction timeframe, this would require 440 afy.

9 - The Project has not provided a construction start date and 2019 is a conservative assumption of when this could occur as it provides time for the NEPA review but conservatively assumes some construction overlap with the Palen Solar Project.

Cumulative Impact Analysis

Groundwater Basin Balance

Public comments on the Project have expressed concern that the amount of groundwater used for construction and operation of the Project would place the groundwater basin into long-term overdraft and deplete the CVGB. Long-term groundwater overdraft is "the condition of a groundwater basin where the average annual amount of water extracted for a long-term period, generally 10 years or more, exceeds the long-term average annual supply of water to the basin, plus any temporary surplus. Overdraft during a period of drought is not sufficient to establish a condition of long-term overdraft if extractions and recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods" (CDWR, 2017). Withdrawals that exceed the average natural recharge for 10 years or more without being offset by groundwater increases would be recognized as an impact. The following discussion presents an analysis of the potential for overdraft and depletion of groundwater in storage to occur under the cumulative scenario during the expected 30-year project life.

Table 4.19-2 provides a 30-year groundwater budget projection for average years of precipitation recharge with Palen Solar Project and all cumulative projects in place. This analysis would also be valid for Alternative 1, the Reduced Footprint Alternative. Only those cumulative projects that would have an effect on groundwater during the assumed 2018 to 2046 period of analysis are included. Assuming an average precipitation year, there would be an initial groundwater overdraft of up to 11,106 af in the year 2022. The groundwater basin would then begin to recover. By the end of the 30-year period, the cumulative groundwater deficit would be approximately 6,114 acre-feet, approximately 0.04% of total storage. Without the Palen Solar Project there would be a deficit of 3,236 acre-feet at the end of the 30-year period. Without the Eagle Crest project the CVGB would be in a growing surplus for all of the 30 analysis years.

Assuming a continuation of normal rainfall, and continued water extraction from cumulative projects, full recovery from all cumulative projects would occur approximately 60 years after project initiation (Aspen, 2016). The maximum overdraft, 11,106 af, represents only about 0.07% of the total volume of the groundwater basin and thus would be negligible in terms of the basin as a whole (Aspen, 2016).

Table 4.19-3 represents the same analysis using the National Park Service (NPS) precipitation infiltration and underflow recharge estimates. The NPS estimate was based in part on extrapolation of groundwater modeling results presented by the U.S. Geological Survey (USGS) in 2004 on the Warren, Joshua Tree, and Copper Mountain groundwater basins, to the CVGB. These basins are nearby but not adjacent to the CVGB, and the groundwater model used is subject to a high level of uncertainty due to simplified assumptions and model inputs. Nevertheless, the NPS low estimate provides a probable range for the groundwater budget given the uncertainties involved. It shows a total cumulative deficit of about 278,364 af (2% of total storage), of which the Proposed Action would contribute about 1 percent, or 2,878 af. Using these inflow estimates, the CVGB, already in overdraft, would continue to lose groundwater with or without the Project (Aspen, 2016). The maximum 30-year cumulative overdraft, 278,364 af, represents about 2% of the total volume of the groundwater basin. With no cumulative projects in place the 30-year

groundwater deficit would be about 200,000 acre-feet, or about 1.3% of the total volume of the groundwater basin.

The Applicant has committed to APM-41 that would require an analysis to address any potential impacts to groundwater extraction on the Joshua Tree National Park including measures to reduce any impacts and would allow the NPS to be consulted on this process. This would reduce any effects of the Project on Joshua Tree National Park, including any contribution to cumulative effects.

Table 4.19-2. 30-Year Projected CVGB Groundwater Budget for Palen Solar Project Plus Cumulative Projects for Average Year Precipitation (afy)

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Palen Solar Project	700	700	371	41	41	41	41	41	41	41
First Solar Desert Sunlight Solar Farm	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Desert Southwest Transmission Line	0.6	0.6	0	0	0	0	0	0	0	0
Eagle Crest Pumped Storage Project	0	4,456	4,456	4,456	4,456	2,050	2,050	2,050	2,050	2,050
Desert Harvest Solar PV Project	500	39	39	39	39	39	39	39	39	39
DC 50 Solar Project	0	100	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SunEdison Origination 3	0	275	275	12.5	12.5	12.5	12.5	12.5	12.5	12.5
First Solar Development	0	440	440	233	25	25	25	25	25	25
SunPower Project	0	440	440	20	20	20	20	20	20	20
Total Used	1,201	6,451	6,024	4,784	4,596	2,190	2,190	2,190	2,190	2,190
CVGB Baseline Surplus	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390
CVGB Surplus Minus Total Use	1,189	–4,061	–3,634	–2,394	–2,206	200	200	200	200	200
Cumulative CVGB Surplus/Deficit	1,189	–2,872	–6,506	–8,900	–11,106	–10,907	–10,707	–10,507	–10,307	–10,108
Year	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**	**2037**
Palen Solar Project	41	41	41	41	41	41	41	41	41	41
First Solar Desert Sunlight Solar Farm	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Desert Southwest Transmission Line	0	0	0	0	0	0	0	0	0	0
Eagle Crest Pumped Storage Project	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050
Desert Harvest Solar PV Project	39	39	39	39	39	39	39	39	39	39

Table 4.19-2. 30-Year Projected CVGB Groundwater Budget for Palen Solar Project Plus Cumulative Projects for Average Year Precipitation (afy)

DC 50 Solar Project	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SunEdison Origination 3	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
First Solar Development	25	25	25	25	25	25	25	25	25	25
SunPower Project	20	20	20	20	20	20	20	20	20	20
Total Used	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190
CVGB Baseline Surplus	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390
CVGB Surplus Minus Total Use	200	200	200	200	200	200	200	200	200	200
Cumulative CVGB Surplus/Deficit	–9,908	–9,708	–9,509	–9,309	–9,109	–8,909	–8,710	–8,510	–8,310	–8,111
Year	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**
Palen Solar Project	41	41	41	41	41	41	41	41	41	41
First Solar Desert Sunlight Solar Farm	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Desert Southwest Transmission Line	0	0	0	0	0	0	0	0	0	0
Eagle Crest Pumped Storage Project	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050
Desert Harvest Solar PV Project	39	39	39	39	39	39	39	39	39	39
DC 50 Solar Project	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SunEdison Origination 3	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
First Solar Development	25	25	25	25	25	25	25	25	25	25
SunPower Project	20	20	20	20	20	20	20	20	20	20
Total Used	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190
CVGB Baseline Surplus	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390	2,390
CVGB Surplus Minus total use	200	200	200	200	200	200	200	200	200	200
Cumulative CVGB Surplus/Deficit	–7,911	–7,711	–7,512	–7,312	–7,112	–6,912	–6,713	–6,513	–6,313	–6,114

Table 4.19-3. 30-Year Projected CVGB Groundwater Budget for Palen Solar Project Plus Cumulative Projects Using NPS Precipitation and Underflow Recharge Estimates

Year	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Palen Solar Project	700	700	371	41	41	41	41	41	41	41
First Solar Desert Sunlight Solar Farm	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Desert Southwest Transmission Line	0.6	0.6	0	0	0	0	0	0	0	0
Eagle Crest Pumped Storage Project	—	4,456	4,456	4,456	4,456	2,050	2,050	2,050	2,050	2,050
Desert Harvest Solar PV Project	500	39	39	39	39	39	39	39	39	39
DC 50 Solar Project	—	100	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SunEdison Origination 3	—	275	275	12.5	12.5	12.5	12.5	12.5	12.5	12.5
First Solar Development	—	440	440	233	25	25	25	25	25	25
SunPower Project		440	440		20	20	20	20	20	20
Total Used	1,201	6,451	6,024	4,784	4,596	2,190	2,190	2,190	2,190	2,190
CVGB Baseline Deficit	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685
CVGB Deficit Minus Total Use	–7,886	–13,136	–12,709	–11,469	–11,281	–8,875	–8,875	–8,875	–8,875	–8,875
Cumulative CVGB Surplus/Deficit	–7,886	–21,022	–33,731	–45,200	–56,481	–65,357	–74,232	–83,107	–91,982	–100,858

Year	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
Palen Solar Project	41	41	41	41	41	41	41	41	41	41
First Solar Desert Sunlight Solar Farm	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Desert Southwest Transmission Line	0	0	0	0	0	0	0	0	0	0
Eagle Crest Pumped Storage Project	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050
Desert Harvest Solar PV Project	39	39	39	39	39	39	39	39	39	39
DC 50 Solar Project	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SunEdison Origination 3	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
First Solar Development	25	25	25	25	25	25	25	25	25	25
SunPower Project	20	20	20	20	20	20	20	20	20	20
Total Used	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190

Table 4.19-3. 30-Year Projected CVGB Groundwater Budget for Palen Solar Project Plus Cumulative Projects Using NPS Precipitation and Underflow Recharge Estimates

CVGB Baseline Deficit	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685
CVGB Deficit Minus total use	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875
Cumulative CVGB Surplus/Deficit	–109,733	–118,608	–127,484	–136,359	–145,234	–154,110	–162,985	–171,860	–180,735	–189,611
Year	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**	**2046**	**2047**
Palen Solar Project	41	41	41	41	41	41	41	41	41	41
First Solar Desert Sunlight Solar Farm	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Desert Southwest Transmission Line	0	0	0	0	0	0	0	0	0	0
Eagle Crest Pumped Storage Project	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050	2,050
Desert Harvest Solar PV Project	39	39	39	39	39	39	39	39	39	39
DC 50 Solar Project	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
SunEdison Origination 3	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5	12.5
First Solar Development	25	25	25	25	25	25	25	25	25	25
SunPower Project	20	20	20	20	20	20	20	20	20	20
Total Used	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190	2,190
CVGB Baseline Deficit	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685	–6,685
CVGB Deficit Minus Total use	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875	–8,875
Cumulative CVGB Surplus/Deficit	–198,486	–207,361	–216,237	–225,112	–233,987	–242,863	–251,738	–260,613	–269,488	–278,364

For Alternative 2, the Avoidance Alternative, the cumulative analysis summarized in Table 4.19-2 would show a groundwater surplus of 10,314 af at the end of 30 years with Alternative 2 in place, as opposed to 8,889 af with the Proposed Action. The initial CVGB overdraft induced by cumulative projects would be overcome in year 2034 with Alternative 2 as opposed to 2036 with the Proposed Action. The cumulative analysis using NPS precipitation and underflow estimates (Table 4.19-3 for the Proposed Action) would be very similar with Alternative 2, with less than a 1% reduction in cumulative CVGB deficit.

There are substantial uncertainties regarding the long-term groundwater budget. Climate change could result in drier conditions with more water use, potentially resulting in a baseline groundwater deficit to which cumulative projects would contribute. There are differences of opinion among experts regarding the CVGB baseline inflow and outflow estimates, which is why two cumulative

budgets are presented, and future water use could be different than projected if some existing uses cease operations or new unknown projects are added.

Groundwater Levels

The FEIS (BLM, 2011), using a long-term cumulative project operational groundwater use of 3,745 afy, as opposed to 1,590 afy for the analysis presented in Tables 4.19-1, 4.19-2 and 4.19-3, along with higher construction water use, predicted cumulative long-term groundwater level declines of 5 feet or more would occur approximately 9,000 feet from the proposed Palen Solar Project production wells. The closest existing well is located about 9,000 feet from production wells; therefore, based on modeling results, nearby wells could experience limited drawdown (BLM, 2011).

The FEIS (BLM, 2011) also reported that modeling conducted by the (previous) applicant indicated that water level declines would be less than what is conservatively presented above. While preliminary studies and calculations have been made to assess the potential for impact, the quantification of the impact is considered an estimate and could not be quantified accurately until actual long-term groundwater production occurs. Mitigation Measures WR-2, WR-3, WR-7, WR-8, WR-9 and WR-10 are required to mitigate potential impacts to groundwater users (wells) associated with the potential lowering of the groundwater table through monitoring and avoidance, replacement of wells, payment for increased electricity usage, and other well-related mitigation measures.

Based on the modeling results presented above, potential cumulative impacts to the Colorado River are not expected; and no measurable drawdown or reduction in flows associated with the Colorado River is anticipated. Nonetheless, mitigation measures are required to address any remaining uncertainty. With the implementation of these measures, potential impacts related to Colorado River hydrology either would be avoided entirely or would be off-set by a requirement that the Applicant apply for and receive an allocation (BLM, 2011).

The alternatives would have similar cumulative impacts.

Groundwater Quality

There is a potential that cumulative groundwater quality impacts could occur if contaminated or hazardous materials from various projects used during construction and operation of the various projects were to be released and migrate to the groundwater table. Because all of the projects listed in Table 4.19-1 would be required to comply with existing water quality regulations, the potential for a cumulative groundwater quality impact is low. Additionally, the Project would be expected to contribute only a small amount to a possible cumulative impact related to groundwater quality, given the distance to the groundwater table (>100 feet bgs) over the CVGB and compliance with existing water quality regulations (Section 3.19.1.1) which are intended to avoid such an impact.

The alternatives would have similar cumulative impacts.

Surface Water Hydrology

Cumulative impacts of the various projects on the local surface water hydrology would be related directly to proposed onsite grading and the construction and operation of any engineered collector/

conveyance channels designed for the purpose of protecting the various projects from flooding. The cumulative projects could change both the extent and physical characteristics of the existing floodplains within and possibly downstream of each project site. There is not enough information available for the proposed cumulative project sites, nor has a regional study been completed to define the potential extent of cumulative effects on surface water within the watershed. However, it is assumed that each of these projects would be required to define their impacts and mitigate where required (BLM, 2011).

The Project would be expected to contribute only a small amount to any possible cumulative impact related to surface water hydrology because the Project will maintain existing drainage patterns and contours where possible, reduce grading to the extent feasible, retain vegetation below 18 inches in height, and install retention basins where necessary to control peak flows.

The alternatives would have similar cumulative impacts.

Surface Water Quality

Stormwater generated on the various project sites may encounter soil or chemicals deleterious to aquatic and terrestrial plants and wildlife. However, a cumulative effect would occur only if the projects generated sufficient contaminants and if the stormwater from multiple projects combined. All projects would be required to implement BMPs for managing potentially harmful stormwater and protecting water quality according to existing water quality regulations and other mitigation measures either previously required or likely to be required under future NEPA and CEQA review. The potential for a cumulative effect to surface water quality is low and the Project would be expected to contribute only a small amount to any potential cumulative impact related to surface water quality.

The alternatives would have similar cumulative impacts.

4.19.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are 14 APMs relevant to water resources (Section 2.2.7, Chapter 2). Table 4.19-4 explains how these measures reduce project effects, and how they relate to mitigation measures below.

Table 4.19-4. Applicant Proposed Measures for Water Resources

APM #	Text	Explanation
APM-29	In addition to the applicable required governmental safeguards, implement up-to-date standard industry construction practices to prevent toxic substances from leaching into the soil.	APM-29 is supplemented by MMs WR-1 (Drainage Erosion and Sedimentation Control Plan), WR-4 (Drainage Report), WR-5 (Drainage Maintenance Plan), WR-6 (Closure and Decommissioning Plan), and WR-10 (Groundwater Quality Monitoring and Reporting Plan) to further reduce project impacts to groundwater and surface water quality.

Table 4.19-4. Applicant Proposed Measures for Water Resources

APM #	Text	Explanation
APM-30	Prepare an emergency response plan, approved by the BLM contaminant remediation specialist, that ensures rapid response in the event of spills of toxic substances over soils.	APM-30 is supplemented by MMs WR-1 (Drainage Erosion and Sedimentation Control Plan), WR-4 (Drainage Report), WR-5 (Drainage Maintenance Plan), WR-6 (Closure and Decommissioning Plan), and WR-10 (Groundwater Quality Monitoring and Reporting Plan) to further reduce project impacts to groundwater and surface water quality.
APM-31	Where possible, side casting shall be avoided where road construction requires cut-and-fill procedures.	APM-31 is supplemented by MMs WR-1 (Drainage Erosion and Sedimentation Control Plan), WR-4 (Drainage Report), WR-5 (Drainage Maintenance Plan), WR-6 (Closure and Decommissioning Plan), and WR-10 (Groundwater Quality Monitoring and Reporting Plan) to further reduce project impacts to groundwater and surface water quality.
APM-32	All relevant requirements of Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands) will be complied with.	APM-32 is supplemented by MMs WR-1 (Drainage Erosion and Sedimentation Control Plan, WR-4 (Project Drainage Report and Plans), WR-5 (Drainage Maintenance Program), and WR-10 (Groundwater Quality Monitoring and Reporting Plan) to further reduce project impacts to groundwater quality and floodplains. With implementation of these MMs the project and alternatives will comply with Executive Order 11988.
APM-33	Surface water diversion for beneficial use will not occur absent a state water right.	Adherence to APM-33 is required by law, so it is assumed in the analysis.
APM-34	The 100-year floodplain boundaries for any surface water feature in the vicinity of the project will be identified. If maps are not available from the Federal Emergency Management Agency (FEMA), these boundaries will be determined via hydrologic modeling and analysis as part of the environmental review process. Construction within, or alteration of, 100-year floodplains will be avoided where possible, and permitted only when all required permits are obtained.	APM-34 is supplemented by MMs WR-1 (Drainage Erosion and Sedimentation Control Plan, WR-4 (Project Drainage Report and Plans), WR-5 (Drainage Maintenance Program), and WR-10 (Groundwater Quality Monitoring and Reporting Plan) to further reduce project impacts to groundwater quality and floodplains.
APM-35	Water extracted or consumptively used for the construction, operation, maintenance, or remediation of the project shall be solely for the beneficial use of the project or its associated mitigation and remediation measures, as specified in approved plans and permits.	The Applicant has committed to this APM as a part of the Proposed Action. The analysis assumes the use of water for construction and operations only.
APM-36	Water flow meters shall be installed on all extraction wells permitted by BLM (in compliance with Mitigation Measure WR-2).	The analysis of mitigation measures has considered the implementation of APM-36 prior to considering the need for other mitigation measures and has determined that it reduces project impacts to groundwater.

Table 4.19-4. Applicant Proposed Measures for Water Resources

APM #	Text	Explanation
APM-37	Water-conservation measures shall be applied. These measures may include the use of specific technology, management practices, or both. Application of these measures shall be detailed in the Groundwater Water Monitoring and Mitigation Plan, which shall include a detailed discussion and analysis of the effectiveness of the specified water-conservation measures.	APM-37 is supplemented by MM WR-8 (Ground Subsidence Monitoring and Action Plan) to include addressing ground subsidence.
APM-38	Activities shall comply with local requirements for any long-term or short-term domestic water use and wastewater treatment.	APM-38 is supplemented by MM WR-10 (Groundwater Quality Monitoring and Reporting Plan) to further reduce project impacts to groundwater quality.
APM-39	The siting, construction, operation, maintenance, remediation, and abandonment of all wells shall conform to specifications contained in the California Department of Water Resources Bulletins #74-81 and #74-90 and their updates.	The analysis of mitigation measures has considered the implementation of APM-39 prior to considering the need for other mitigation measures and has determined that it reduces project impacts to groundwater.
APM-40	Colorado River hydrologic basin – The concepts, principles and general methodology used in the Colorado River Accounting Surface Method, as defined in U.S. Geological Survey Scientific Investigations Report 2008-5113 (USGS, 2009), and existing and future updates or a similar methodology, are considered the best available data for assessing project related groundwater impacts in the Colorado River hydrologic basin. The best available data and methodology shall be used to determine whether project-related pumping would result in the extracted water being replaced by water drawn from the Colorado River. If project-related groundwater pumping results in the static groundwater level at the well being near (within 1 foot), equal to, or below the Accounting Surface in a basin hydrologically connected to the Colorado River, that consumption shall be considered subject to the Law of the River (Colorado River Compact of 1922 and amendments). In such circumstances, the applicant offset or otherwise mitigate the volume of water causing drawdown below the Accounting Surface. Details of such measures and the right to the use of water shall be described in the Groundwater Water Monitoring and Mitigation Plan.	APM-40 is supplemented by MM WR-7 (Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin) and WR-9 (Estimation of Impacts to PVMGB) to further reduce project impacts to the Palo Verde Mesa Groundwater Basin (PVMGB).

Table 4.19-4. Applicant Proposed Measures for Water Resources

APM #	Text	Explanation
APM-41	Environmental analysis for activities involving groundwater extraction that are in the vicinity of Joshua Tree National Park shall analyze and address any potential impacts of groundwater extraction on Joshua Tree National Park. The National Park Service shall be consulted on this process. The analysis or analyses shall include: ▪ Potential impacts on the water balances of groundwater basins within these parks and preserves; ▪ A map identifying all potentially impacted surface water resources in the vicinity of the project, including a narrative discussion of the delineation methods used to discern those surface waters in the field; ▪ Any project-related modifications to surface water resources, both temporary and permanent; ▪ Analysis of any potential impacts on perennial streams, intermittent streams, and ephemeral drainages that could negatively impact natural riparian buffers; ▪ Impacts of any project proposed truncation, realignment, channelization, lining, or filling of surface water resources that could change drainage patterns, reduce available riparian habitat, decrease water storage capacity, or increase water flow velocity or sediment deposition, in particular where stormwater diverted around or through the project site is returned to natural drainage systems downslope of the Project; ▪ Any potential indirect project-related causes of hydrologic changes that could exacerbate flooding, erosion, scouring, or sedimentation in stream channels; and ▪ Alternatives and measures proposed to reduce or eliminate such impacts.	This APM is specific to Joshua Tree National Park (Park). Since the analysis discusses groundwater as a whole and since the Park is included in the groundwater study area, the Park is already incorporated into the analysis.
APM-49	All facility components that alter site hydrology will be designed to maintain continued aeolian sediment sorting and transport to downwind deposition zones, with designs subject to approval by BLM.	The analysis of mitigation measures has considered the implementation of APM-49 prior to considering the need for other mitigation measures and has determined that it reduces project impacts to erosion.

The FEIS (BLM, 2011) presented 18 mitigation measures that were taken from the California Energy Commission 2010 RSA Section C.9 (Soil and Water Resources); these 18 measures were determined to be applicable to the Project and sufficient to would address potential the PSPP's project-related impacts on water resources. Not all these mitigation measures are applicable to the Proposed Action in this supplemental EIS/EIR due to differences in proposed solar power generation technology. The 2011 mitigation measures that are not applicable are:

- **SOIL&WATER-2: Project Groundwater Wells, Pre-Well Installation.** This mitigation measure requires the Applicant to obtain permits for well installation. As permits would normally be required by existing regulations, additional mitigation is not necessary.

- **SOIL&WATER-5:** This mitigation measure gives specific methods for calculating the cost of reimbursement of private well owners for increased energy costs as a result of analysis performed in Condition of Certification SOIL&WATER-4. SOIL&WATER-4 has been modified as Mitigation Measure WR-3 to allow for development of an updated groundwater model and reduced project pumping projections. The specific methods of calculating the cost of reimbursement of private well owners would be the subject of the monitoring plan developed as a condition of WR-3.

- **SOIL&WATER-6: Waste Discharge Requirements.** This mitigation measure was intended to avoid impacts generated by reverse osmosis reject water, auxiliary equipment blowdown water, and sanitary wastewater. The Proposed Action has none of these features except sanitary wastewater which is addressed in the impact section above and in SOIL&WATER-7. SOIL&WATER-6 is not necessary for this Project.

- **SOIL&WATER-7: Septic System and Leach Field Requirements.** This mitigation measure requires compliance with County of Riverside Ordinance Code Title 8, Chapter 8.124 and the California Plumbing Code (California Code of Regulations Title 24, Part 5) regarding sanitary waste disposal facilities such as septic systems and leach fields. As compliance with these measures is required by law, the mitigation measure is not used.

- **SOIL&WATER-9: Detailed FLO-2D Analysis.** This mitigation measure requires development of a two-dimensional hydraulic model to assess floodplain conditions, limits, depths and velocities on the site. This mitigation measure is now combined with SOIL&WATER-8 in Mitigation Measure WR-4 and does not confine the analysis to FLO-2D, as there may be other adequate two-dimensional models that would be acceptable to Riverside County and the BLM.

- **SOIL&WATER-10: Drainage Channel Design.** The Proposed Action does not use major drainage channels, although there will be drainage features constructed on the site. This mitigation measure is revised and combined with SOIL&WATER-8 in Mitigation Measure WR-4.

- **SOIL&WATER-11: Channel Erosion Protection.** The Proposed Action does not use major drainage channels, although there will be drainage features constructed on the site. This mitigation measure is revised and combined with SOIL&WATER-8 in Mitigation Measure WR-4.

- **SOIL&WATER-15: Groundwater Production Reporting.** This mitigation measure requires compliance with Water Code Sections 4999 et seq. for reporting of groundwater production in excess of 25 acre-feet per year. As compliance with this measure is required by law, the mitigation measure is not used.

- **SOIL&WATER-19: Non-Transient, Non-Community Water System.** This mitigation measure was intended to avoid impacts related to the use of onsite wells for potable water. Onsite wells are no longer proposed to be used for potable water, which will be brought in as bottled water. SOIL&WATER-19 is not necessary for this Project.

The remaining CEC mitigation measures are applicable and are presented below. Some have been modified to reflect the current project features. The mitigation measures have also been modified to remove references to interactions with or reporting to the CEC, items that are not relevant to surface water and groundwater, and conditions that were specific to project features that do not

apply. Table 4.19-5 is a crosswalk that lists the mitigation measures are originally presented and those for the Proposed Action.

Table 4.19-5. Crosswalk for Mitigation Measures Identified for PSPP and the Proposed Action

Measure	Supplemental EIS/EIR Mitigation Measure Number	PSPP 2011 Mitigation Measure Number
Drainage Erosion and Sedimentation Control Plan (DESCP)	WR-1	Soil&Water-1
Construction and Operation Water Use	WR-2	Soil&Water-3
Groundwater Level Monitoring, Mitigation, and Reporting	WR-3	Soil&Water-4
Project Drainage Report and Plans	WR-4	Soil&Water-8 Incorporates modifications from Soil&Water-9, Soil&Water-10, Soil&Water-11
Drainage Maintenance Program	WR-5	Soil&Water-12
Closure and Decommissioning Plan	WR-6	Soil&Water-13
Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin	WR-7	Soil&Water-14
Ground Subsidence Monitoring and Action Plan	WR-8	Soil&Water-16
Estimation of Impacts to PVMGB	WR-9	Soil&Water-17
Groundwater Quality Monitoring and Reporting Plan	WR-10	Soil&Water-18
Septic System Design Plan	WR-11	n/a

Mitigation measures recommended for the Palen Solar Project are as follows:

WR-1 **Drainage Erosion and Sedimentation Control Plan (DESCP).** At least 60 days prior to site mobilization, the project owner shall submit to the BLM and the County of Riverside a Drainage Erosion and Sedimentation Control Plan (DESCP) for managing stormwater during project construction and operations as normally administered by the County of Riverside. No ground disturbance may occur on the project site until BLM and the County have approved the DESCP. The DESCP must ensure proper protection of water quality and soil resources, demonstrate no flow diversions or increase in off-site flooding potential including by the proposed security fence, include provisions for sediment and stormwater retention to meet any Riverside County requirements, address exposed soil treatments in the solar fields for both road and non-road surfaces, and identify all monitoring and maintenance activities. The plan must also cover all linear project features such as offsite transmission mains. The DESCP shall contain, at minimum, the elements presented below that outline site management activities and erosion and sediment-control Best Management Practices (BMP) to be implemented during site mobilization, excavation, construction, and post construction (operating) activities.

A. **Vicinity Map.** A map(s), at a minimum scale 1 inch to 500 feet, shall be provided indicating the location of all project elements (construction sites, laydown area, pipelines) with depictions of all significant geographic features including swales, storm drains, and sensitive areas.

B. **Site Delineation.** All areas subject to soil disturbance for the Proposed Action (project phases, laydown area, all linear facilities, landscaping areas, and any other project elements) shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

C. **Watercourses and Critical Areas.** The DESCP shall show the location of all nearby watercourses including swales, storm drains, and drainage ditches. It shall indicate the proximity of those features to the Proposed Action construction, laydown, and landscape areas and all transmission and pipeline construction corridors.

D. **Drainage Map.** The DESCP shall provide a topographic site map(s), at a minimum scale of 1 inch to 200 feet, showing existing, interim, and proposed drainage swales and drainage systems and drainage-area boundaries. On the map, spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended off site for a minimum distance of 100 feet.

E. **Drainage of Project Site Narrative.** The DESCP shall include a narrative of the drainage measures necessary to protect the site and potentially affected soil and water resources within the drainage downstream of the site. The narrative shall include the summary pages from the hydraulic analysis prepared by a professional engineer and erosion control specialist. The narrative shall state the watershed size(s) in acres that was used in the calculation of drainage features.

F. **Clearing and Grading Plans.** The DESCP shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography shall be illustrated by tying in proposed contours with existing topography.

G. **Clearing and Grading Narrative.** The DESCP shall include a table with the estimated quantities of material excavated or filled for the site and all project elements (project site, laydown area, transmission and pipeline corridors, roadways, and bridges) whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.

H. **Erosion Control.** The plan shall address exposed soil treatments to be used during construction and operation of the Proposed Action for both road and non-road surfaces including specifically identifying all chemical based dust palliatives, soil bonding, and weighting agents appropriate for use at the proposed project site that would not cause adverse effects to vegetation. BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use.

I. **Best Management Practices Plan.** The DESCP shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during

each phase of construction (initial grading, project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to control dust, stabilize construction access roads and entrances, and control stormwater runoff and sediment transport.

J. **Best Management Practices Narrative.** The DESCP shall show the location (as identified in (I) above), timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during all project element (site, pipelines) excavations and construction, final grading/stabilization, and operation. Separate BMP implementation schedules shall be provided for each project element for each phase of construction. The maintenance schedule shall include post-construction maintenance of structural-control BMPs, or a statement provided about when such information would be available.

K. **Project Schedule.** The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, project element construction, and final grading/stabilization). Separate BMP implementation schedules shall be provided for each project element for each phase of construction.

L. **Erosion Control Drawings.** The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer or erosion control specialist.

M. **Agency Comments.** The DESCP shall include copies of recommendations, conditions, and provisions from the County of Riverside, California Department of Fish and Game (CDFG), and Colorado River Basin Regional Water Quality Control Board (CRBRWQCB).

N. **Monitoring Plan.** Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, and stormwater diversions.

O. **Adaptive Management Plan.** An adaptive management plan shall be included to monitor system performance and make adjustments to the design if the system is determined to be inadequate.

WR-2 **Construction and Operation Water Use.** The Proposed Action's use of groundwater during construction shall not exceed 700 afy (total of 1,750 af during the 30 months) during construction and 41 afy during operation. Water quantity used for project construction and operation shall be reported to the BLM to ensure compliance with this condition. Prior to the use of groundwater for construction, the project owner shall install and maintain metering devices as part of the water supply and distribution system to document project water use and to monitor and record in gallons per day the total volume(s) of water supplied to the Project from this water source. The metering devices shall be operational for the life of the Project.

WR-3 **Groundwater Level Monitoring, Mitigation, and Reporting.** The project owner shall develop and submit a Groundwater Level Monitoring, Mitigation, and

Reporting Plan to the BLM for review and approval in advance of construction activities and prior to the operation of onsite groundwater supply wells. The Groundwater Level Monitoring, Mitigation, and Reporting Plan shall be based on a numerical groundwater model acceptable to the BLM and provide detailed methodology and schedule for monitoring background and site groundwater levels. Monitoring shall include pre-construction, construction, and project operation water use and address project-related effects to nearby wells on other property. The plan shall establish pre-construction and project-related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the project pumping wells and near potentially impacted existing wells. The plan shall establish criteria and procedures for groundwater use adjustments or compensation to adjacent well owners that have been significantly affected by project pumping, which may include such measures as compensation for increased energy costs due to project-related well drawdown, or well improvements necessary due to project-related drawdown.

WR-4 **Project Drainage Report and Plans.** The project owner shall provide Riverside County and the BLM with a current Drainage Report, for review and approval prior to construction, which includes the following information:

A. Reassessment of upstream hydrology and consideration of the potential failure of upstream earthen berms and specifically the earthen berm located along the Corn Spring Wash crossing under I-10.

B. Revised onsite hydrology calculations using CN values consistent with the Riverside County Hydrology Manual.

C. A detailed onsite hydraulic analysis utilizing FLO-2D or similar two-dimensional hydraulic model acceptable to the BLM and Riverside County which models pre- and post-development flood conditions for the 10-, 25- and 100-year storm events. The post-development model must include all Proposed Action features, contours, and drainage improvements. Graphical output must include depth and velocity mapping as well as mapping which graphically shows the changes in both parameters between the pre- and post-development conditions. Color shading schemes used for the mapping must be consistent between all maps as well as clear and easily differentiated between designated intervals for hydraulic parameters. Intervals to be used in the mapping are: Flow Depth at 0.20 ft intervals up to 1 ft, and 0.40 ft intervals thereafter. Velocity: 0.5 ft/s intervals.

D. Detailed analysis and documentation of onsite drainage features and all other project features including buildings, the substation, access roads, culverts, linear features and panel supports, demonstrating adequate design to protect from flooding, erosion and scour, and to do so without adversely affecting adjacent property, inducing erosion or concentrating or diverting flows.

E. Detailed design of flood retention features necessary to avoid any increase in downstream flood peak flow rates.

WR-5 **Drainage Maintenance Program.** The project owner shall develop and implement a Drainage Maintenance Program that provides long-term guidance to implement routine maintenance of project drainage features in a feasible and environmentally sensitive manner. The Drainage Maintenance Program will be a process and policy document prepared by the project owner, reviewed and approved by the BLM.

The Drainage Maintenance Program provides the permitting requirements for drainage maintenance work for individual routine maintenance of the engineered drainage features without having to perform separate CEQA/NEPA review or obtain permits.

The Drainage Maintenance Program provides guidelines regarding timing, implementation, resource protection and reporting procedures for all drainage maintenance activities.

WR-6 **Closure and Decommissioning Plan.** The project owner shall prepare a decommissioning plan that will meet the requirements of the BLM. The project owner shall identify likely decommissioning scenarios and develop specific decommissioning plans for each scenario that will identify actions to be taken to avoid or mitigate long-term impacts related to water and wind erosion after decommissioning. The Plan shall include defining an approach to decommissioning the septic system, including the leach field and all buried pipes. Actions may include such measures as a decommissioning SWPPP, revegetation and restoration of disturbed areas, post-decommissioning maintenance, collection and disposal of project materials and chemicals, and access restrictions.

WR-7 **Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin.** The project owner shall undertake activities to mitigate project impacts that result in depletion of the PVMGB groundwater budget. The amount of PVMGB depletion requiring mitigation shall be determined based on an analysis of the Project's effect on the PVMGB groundwater budget, including an estimate of the decrease in underflow form from the CVGB to the PVMGB. The analysis shall be conducted as described in Mitigation Measure WR-9.

Water conservation projects that may be considered as mitigation include: payment for irrigation improvements in Palo Verde Irrigation District (PVID), payment for irrigation improvements in Imperial Irrigation District, purchase of water rights within the Colorado River Basin that will be held in reserve, and/or BLM's Tamarisk Removal Program, or other proposed mitigation activities acceptable to the BLM. The activities proposed for mitigation shall be outlined in a Water Supply Plan that will be provided to the BLM for review and approval.

WR-8 **Ground Subsidence Monitoring and Action Plan.** One monument monitoring station per production well or a minimum of three stations shall be constructed to measure potential inelastic subsidence that may alter surface characteristics of the Chuckwalla Valley near the proposed production wells. The Applicant shall:

A. Prepare and submit a Subsidence Monitoring Plan (SMP). The plan shall include the following elements:

- Construction diagrams of the proposed monitoring station including size and description, planned depth, measuring points, and protection measures;
- Map depicting locations (minimum of three) of the planned monument monitoring stations;
- Monitoring program that includes monitoring frequency, thresholds of significance, reporting format.

B. Prepare quarterly reports commencing three (3) months following commencement of groundwater production during construction and operations. The reports shall include presentation and interpretation of the data collected including comparison to the thresholds developed in Item C.

C. Prepare a Mitigation Action Plan that details the following:

- Thresholds of significance for implementation of proposed action plan; structures
- Any subsidence that may occur will not be allowed to damage existing structures either on or off the site or alter the appearance or use of the structure;
- Any subsidence that may occur will not be allowed to alter the natural drainage patterns or permit the formation of playas or lakes;
- Any subsidence that violates (a) or (b) will result in the project owner investigating the need to immediately reduce/cease pumping until the cause is identified or subsidence caused by project pumping abates and the structures and/or drainage patterns are stabilized and corrected.
- Action Plan that details proposed actions by the Applicant in the event thresholds are achieved during the monitoring program.

The Applicant shall submit the Ground Subsidence Monitoring and Action Plan that is prepared by an Engineering Geologist registered in the State of California 30 days prior to the start of extraction of groundwater for construction or operation.

WR-9 **Estimation of Impacts to Palo Verde Mesa Groundwater Basin (PVMGB).** The project owner shall conduct an analysis of the Project's effect on the PVMGB groundwater budget including an estimate of the decrease in underflow from the CVGB to the PVMGB. The analysis shall include the following:

A. Refinement of the estimate of decrease in underflow from the CVGB to the PVMGB using the numerical groundwater flow model developed for the Project under WR-3. An upper-bound estimate of the underflow decrease shall be developed through sensitivity analysis of the lateral hydraulic conductivity of the pumped aquifer and the general head boundaries, as well as recharge.

a. A statistical analysis of existing aquifer tests and specific capacity tests in the western CVGB shall be conducted to characterize the distribution of hydraulic conductivity values in the area.

b. Model runs shall be conducted using the first quartile (25%), second quartile (50%) and third quartile (75%) hydraulic conductivities to evaluate the change in underflow induced by project pumping under a reasonable range of values.

c. The effect of recharge in the model domain shall be simulated by applying mountain front recharge at the appropriate locations in amounts representing 2% to 3% of total average incident precipitation falling on the model domain and tributary mountain areas.

B. The maximum predicted decrease in underflow from the CVGB to the PVMGB shall be used to assess the volume of water requiring mitigation under WR-7. The volume predicted will include the cumulative decrease in underflow during the period the project pumps groundwater from the CVGB as well as any latency effects following cessation of pumping. The latency period will extend until underflow achieves pre-project conditions.

C. An assessment report shall be prepared summarizing the methods and results of this supplemental analysis, presenting any supporting data, assumptions made, and an estimate of the uncertainty of PVMG underflow depletion.

D. The project owner shall present the results of the conceptual model, numerical model, transient runs and sensitivity analysis in a report for review and approval by the BLM. The report shall include all pertinent information regarding the development of the conceptual and numerical models. The report shall include:

a. Introduction
b. Previous Investigations
c. Conceptual Model Development
d. Numerical Model and Input Parameters
e. Sensitivity Analysis
f. Transient Modeling Runs
g. Conclusions

WR-10 **Groundwater Quality Monitoring and Reporting Plan.** Before the start of construction, the project owner shall submit a Groundwater Quality Monitoring and Reporting Plan to the BLM and the County for review and approval. The Groundwater Quality Monitoring and Reporting Plan shall provide a description of the methodology for monitoring background and site groundwater quality. The sampling required for the water quality monitoring program shall be implemented during groundwater level monitoring events in accordance with Mitigation Measure WR-3. The Plan shall define that, prior to project construction, monitoring shall commence to establish pre-construction groundwater quality conditions in the well proposed for the program and shall include pre-construction, construction, and project operation water use. The water quality monitoring program shall identify potential changes in the existing water quality of the proposed water supply resulting from project pumping, if any, establish pre-construction and project related groundwater quality that can be quantitatively compared against observed and

simulated levels near the project pumping well and near potentially impacted existing wells, and to avoid, minimize, or mitigate significant impacts to sensitive receptors. If compliance data indicate that the water supply quality has deteriorated (exceeds pre-project constituent concentrations in TDS, sodium, chloride, or other constituents identified as part of the monitoring plan and applicable Water Quality Objectives are exceeded for the applicable beneficial uses of the water supply) for three consecutive years, the project owner shall provide treatment or a new water supply to either meet or exceed pre-project water quality conditions to any impacted water supply wells.

WR-11 **Septic System Design Details**. Before the start of construction, the project owner shall submit to BLM and the County a proposed design for the septic system, including whether it will be lined, what monitoring would be implemented for potential effects on groundwater, the leachate that will be used, and a description of the potential effects on groundwater.

4.19.5 Residual Effects after Implementation of Mitigation Measures

Implementation of the mitigation measures identified above would address potential project-related impacts on water resources. However, a small degree of residual impact could remain even following implementation of the proposed mitigation measures. The following text reviews the efficacy of the proposed mitigation measures, and discusses potential for residual impacts, including the efficacy of mitigation measures in avoiding residual impacts, for the following key impact categories.

Groundwater Level Mitigation: As discussed above, a relatively minor degree of residual groundwater level reduction would occur because of project implementation even with the implementation of Mitigation Measures WR-2, WR-3, WR-7 and WR-9.

Colorado River Effects: Although evidence indicates that project wells would not induce flow from the Colorado River, some uncertainty remains. Implementation of the mitigation measures identified above (i.e., WR-7 and WR-9) would avoid or offset potential impacts, if any, related to Colorado River water. Consequently, no residual impact would occur.

Water Quality: Even with the incorporation of WR-10, a very small degree of residual surface and groundwater quality reduction is expected.

Drainage and Flooding: Even with the incorporation of WR-1, WR-4 and WR-5, residual effects related to drainage and flooding could occur. Any such effects would be minor, and could include minor fluctuations in sediment transport along washes adjacent to and downstream of the project site.

4.19.6 Unavoidable Adverse Impacts

There would be no unavoidable adverse impacts.

4.19.7 CEQA Significance Thresholds and Determinations

CEQA significance criteria and determinations are based on the Environmental Checklist Form in Appendix G of the CEQA Guidelines. Under CEQA, the Proposed Action and Alternatives would have significant impacts on water resources if they would:

WR-1 Violate any water quality standards or waste discharge requirements;

WR-2 Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);

WR-3 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;

WR-4 Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;

WR-5 Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;

WR-6 Otherwise substantially degrade water quality;

WR-7 Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;

WR-8 Place within a 100-year flood hazard area structures which would impede or redirect flood flows;

WR-9 Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; or

WR-10 Be subject to inundation by seiche, tsunami, or mudflow

WR-1 Water Quality Standards

The Project, Reduced Footprint Alternative, and Avoidance Alternative could result in surface water quality degradation but this impact will be less than significant through compliance with existing regulations. Descriptions of water quality impacts from the action alternatives are expected to be the same as those from the Proposed Action (see section 4.19.2). Groundwater quality degradation is unlikely.

Mitigation Measures WR-1 (Drainage Erosion and Sedimentation Control Plan (DESCP)), WR-4 (Project Drainage Report and Plans), WR-5 (Drainage Maintenance Program), and WR-10 (Groundwater Quality Monitoring and Reporting Plan) are proposed to ensure any water quality

standards or waste discharge requirements are not violated by the Project or action alternatives. Impacts related to Impact WR-1 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact WR-1 since under this alternative, the Proposed Action would not be constructed.

WR-2 Deplete Groundwater Supplies

The analysis shows the CVGB has ample water to supply the Project's needs, as well as those of the Reduced Footprint Alternative and Avoidance Alternative, unless groundwater inflow estimates are much lower than anticipated. Because inflow estimates are uncertain, groundwater use could contribute to a significant impact by slightly increasing an overdraft (Table 3.19-4) that may exist in the CVGB. Descriptions of groundwater impacts from the action alternatives are expected to be the same as those from the Proposed Action (see section 4.19.2).

Mitigation Measures WR-2 (Construction and Operation Water Use), WR-3 (Groundwater Level Monitoring, Mitigation, and Reporting), WR-7 (Mitigation of Impacts to the Palo Verde Mesa Groundwater Basin), WR-8 (Ground Subsidence Monitoring and Action Plan), and WR-9 (Estimation of Impacts to PVMGB) are proposed to ensure that groundwater supplies are not substantially deplete and groundwater recharge is not interfered with substantially. Impacts related to Impact WR-2 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact WR-2 since under this alternative, the Proposed Action would not be constructed.

WR-3 Erosion

Although the Project, Reduced Footprint Alternative, and Avoidance Alternative will leave drainage patterns essentially in the existing condition, the potential for an impact resulting from downstream erosion remains. Construction activities would loosen existing surface soils and sediments, increasing the potential for erosion during storm events, along with associated effects such as increased downstream sediment yields from on-site disturbed areas, a potentially significant impact. Increased impervious areas could also lead to erosion by increasing the rate and frequency of runoff.

Descriptions of erosion impacts from the action alternatives are expected to be the same as those from the Proposed Action (see section 4.19.2). However, surface water erosion impacts would be reduced by about one fourth in magnitude with the Reduced Footprint Alternative compared to the Proposed Action due to the avoidance of the central wash and smaller area of disturbance. Moreover, surface water erosion impacts from the Avoidance Alternative would also be substantially reduced compared to water quality impacts from the Proposed Action due to the avoidance of the central and eastern washes and the reduction in project areas.

Mitigation Measures WR-1 (Drainage Erosion and Sedimentation Control Plan (DESCP)) and WR-4 (Project Drainage Report and Plans) are proposed to reduce the impact to erosion from the Project or action alternatives. Impacts related to Impact WR-3 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact WR-3 since under this alternative, the Proposed Action would not be constructed.

WR-4 Flooding

The Project, Reduced Footprint Alternative, and Avoidance Alternative will leave drainage patterns essentially in the existing condition and will not substantially alter runoff rates. There is a potential for the Project and action alternatives to be subject to flood damage from flooding and to cause local diversions of flood flows that could affect other property, such as the date palm farm west of the project site, a potentially significant impact.

Descriptions of flooding impacts from the action alternatives are expected to be the same as those from the Proposed Action (see section 4.19.2). However, flooding impacts would be reduced by about one fourth in magnitude with the Reduced Footprint Alternative compared to the Proposed Action due to the avoidance of the central wash and smaller area of disturbance. Moreover, flooding impacts from the Avoidance Alternative would also be substantially reduced compared to water quality impacts from the Proposed Action due to the avoidance of the central and eastern washes and the reduction in project areas.

Mitigation Measure WR-4 (Project Drainage Report and Plans) is proposed to reduce flooding impacts from the Proposed Action or action alternatives. Impacts related to Impact WR-4 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact WR-4 since under this alternative, the Proposed Action would not be constructed.

WR-5 Exceed Capacity of Existing or Planning Stormwater Drainage

All of the drainage systems in the area are natural. Construction of the Project, Reduced Footprint Alternative, or Avoidance Alternative would require excavation and grading for the solar panels, access roads, buildings, the substation, and other features. Disturbance of soil during construction could result in soil erosion and lowered water quality through increased turbidity and sediment deposition into local streams. Accidental spills or disposal of harmful materials used during construction could wash into and pollute surface waters or groundwater a potentially significant impact.

Mitigation Measure WR-4 (Project Drainage Report and Plans) is proposed to reduce the impact from the Project or action alternatives to stormwater drainage systems. Impacts related to Impact WR-5 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact WR-5 since under this alternative, the Proposed Action and action alternatives would not be constructed.

WR-6 Otherwise Degrade Water Quality

Surface water quality degradation from the Project would be mitigated by compliance with existing regulations. Descriptions of surface water impacts from the action alternatives are expected to be the same as those from the Proposed Action (see section 4.19.2). However, impacts to surface water quality would be reduced by about one fourth in magnitude with the Reduced Footprint

Alternative compared to the Proposed Action due to the avoidance of the central wash and smaller area of disturbance. Moreover, impacts to surface water quality from the Avoidance Alternative would also be substantially reduced compared to water quality impacts from the Proposed Action due to the avoidance of the central and eastern washes and the reduction in project areas. Groundwater quality degradation is unlikely.

Mitigation Measures WR-1 (Drainage Erosion and Sedimentation Control Plan (DESCP)), WR-4 (Project Drainage Report and Plans), and WR-10 (Groundwater Quality Monitoring and Reporting Plan) are proposed to ensure that the Project or action alternatives would not substantially degrade water quality. Impacts related to Impact WR-6 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact WR-6 since under this alternative, the Proposed Action would not be constructed.

WR-7 Place Housing within a Flood Hazard Area

The Project does not involve the development of housing, so there would be no impact as a result of the Proposed Action, Reduced Footprint Alternative, or Avoidance Alternative. Since no impacts have been defined for Impact WR-7, no mitigation measures are required.

WR-8 Place Structures within a Flood Hazard Area

The Project, Reduced Footprint Alternative, or Avoidance Alternative will leave drainage patterns essentially in the existing condition and will not substantially alter runoff rates. There is a potential for the project infrastructure itself to be subject to flood damage from flooding, and to cause local diversions of flood flows that could affect other property such as the date palm farm west of the project site, a potentially significant impact.

Descriptions of flooding impacts from the action alternatives are expected to be the same as those from the Proposed Action (see section 4.19.2). However, flooding impacts would be reduced by about one fourth in magnitude with the Reduced Footprint Alternative compared to the Proposed Action due to the avoidance of the central wash and smaller area of disturbance. Moreover, flooding impacts from the Avoidance Alternative would also be substantially reduced compared to water quality impacts from the Proposed Action due to the avoidance of the central and eastern washes and the reduction in project areas.

Mitigation Measure WR-4 (Project Drainage Report and Plans) would reduce the impact to structures placed in flood hazard areas from the Project or action alternatives. Impacts related to Impact WR-8 would therefore be less than significant with mitigation.

The No Action Alternative would not have any impacts related to Impact WR-8 since under this alternative, the Proposed Action would not be constructed.

WR-9 Failure of a Levee or Dam

There are no levees or dams that protect the property, so there would be no impact as a result of the Proposed Action, Reduced Footprint Alternative, or Avoidance Alternative. Since no impacts have been defined for Impact WR-9, no mitigation measures are required.

WR-10 Seiche, Tsunami, or Mudflow

The project area is not subject to seiche, tsunami, or mudflow, so there would be no impact as a result of the Proposed Action, Reduced Footprint Alternative, or Avoidance Alternative. Since no impacts have been defined for Impact WR-10, no mitigation measures are required.

Cumulative Impacts

As described under Section 4.19.3 and above, the Proposed Action and alternatives would not result in significant cumulative impacts except to CEQA Criterion WR-2 (substantially deplete groundwater supplies or interfere substantially with groundwater recharge). Table 4.19-2 provides a 30-year groundwater budget projection for average years with Palen Solar Project and all cumulative projects in place. Assuming an average precipitation year, there would be an initial groundwater overdraft of up to 11,106 af in the year 2022. The groundwater basin would then begin to recover. By the end of the 30-year period, the cumulative groundwater deficit would be approximately 6,114 acre-feet, approximately 0.04% of total storage. Without the Palen Solar Project there would be a deficit of 3,236 acre-feet at the end of the 30-year period. Without the Eagle Crest project the CVGB would have a growing surplus of groundwater for all of the 30 analysis years. According to this analysis, there would be a groundwater impact in the form of reduced groundwater storage in the initial years after initiation of the cumulative projects, followed by slow recovery in which the impact would disappear after about 60 years assuming normal rainfall every year. The maximum overdraft, 11,106 af, represents only about 0.07% of the total volume of the groundwater basin and thus would be negligible in terms of the basin as a whole (Aspen, 2016). The alternatives would have similar results. This groundwater overdraft, which would last more than 10 years, would result in a significant cumulative impact according to the threshold described in Section 4.19.3. However, the CVGB would eventually recover.

There are substantial uncertainties regarding the long-term groundwater budget. Climate change could result in drier conditions with more water use, potentially resulting in a baseline groundwater deficit to which cumulative projects would contribute. There are differences of opinion among experts regarding the CVGB baseline inflow and outflow estimates, which is why two cumulative budgets are presented, and future water use could be different than projected if some existing uses cease operations or new unknown projects are added. The contribution of the Proposed Action or alternatives to significant cumulative impacts to water resources would be less than significant

4.20 Wildland Fire Ecology

4.20.1 Impact Assessment Methodology

This section describes and evaluates the effects related to wildland fire ecology of the Palen Solar Project (Proposed Action), the No Action Alternative, and other alternatives.

This analysis incorporates the Wildlife Fire Ecology analysis from the PSPP PA/FEIS (BLM, 2011) and PSPP RSA, Section 4.20.1 (CEC, 2010). The analysis from those documents is modified here to update the environmental baseline and to address the solar PV technology.

Mitigation Measures and Applicant Proposed Measures

This analysis considers the relevant mitigation measures presented in the PSPP analysis in the BLM PA/FEIS and CEC RSA. Mitigation measures are referenced by title and number in the discussion of effects (Section 4.20.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.20.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. One APM relevant to wildland fire ecology (APM-43) addresses the implementation of standard practices for fire prevention.

4.20.2 Direct and Indirect Effects

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

The Project would consist of a 500 MW solar photovoltaic facility on approximately 4,000 acres of public land administered by the BLM. In addition, a 230 kilovolt (kV) generation interconnection line (gen-tie line) and an operations and maintenance facility are proposed for at the project site. The gen-tie line would interconnect with the power grid at Southern California Edison's (SCE) Red Bluff Substation. The Project is located in a Development Focus Area (DFA) under the Desert Renewable Energy Conservation Plan (DRECP), which amended the CDCA Plan.

As described in Section 3.20, the occurrence of wildfires in the project area has been low. However, the project site is located in a part of Riverside County that has been determined to have a moderate susceptibility to wildfire (Riverside County, 2016). Wildfires are rare in the project area, but can be ignited by construction activities, hikers or off-road vehicle drivers, downed transmission lines, lightning, and vehicles traveling on the nearby Interstate 10 freeway (I-10) and other roads in the project study area.

Proposed Action: Direct Effects

Fire response is dependent upon services that would be fully or partly provided by the Riverside County Fire Department (RCFD). The RCFD is expected to respond or assist with a response to a fire on the proposed site. The two closest RCFD stations to the proposed site are located off of

I-10, approximately 10 miles west. The Lake Tamarisk Station (#49) is located at 43880 Lake Tamarisk in Desert Center and the Terra Lago Station (#87) is located at 42900 Golf Center Parkway in Indio.

Construction activities required for the Project would create the potential for a wildfire to be started. The vegetation fuel types in the project area are not fire-adapted; they include Sonoran creosote bush scrub, desert dry wash woodland, unvegetated ephemeral dry wash, desert sink scrub, and desert dunes. Wildfires could be caused by construction workers smoking, refueling and operating vehicles and other equipment, or spilled fuels on paved roadways. There is also a potential for a wildfire to start during operation and maintenance activities, from similar activities as defined for construction.

A project-related fire could escape initial containment and pose a hazard to life and property for project personnel and nearby landowners. Other direct impacts of wildfire include mortality of plants and wildlife and loss of forage and cover. Moreover, wildfires alter nutrient levels and water absorption abilities of soil and microclimate conditions. Post-fire recovery is highly variable depending on factors such as burn location, intensity, and post-fire plant succession. Annual plants and burrowing wildlife would be less affected in the short term if seeds in the soil and animals under the soil are not harmed (BLM, 2011).

Proposed Action: Indirect Effects

Indirect impacts of wildfires are changes to the vegetation communities and the wildlife supported by the communities. The spread of invasive plants, especially annual grasses, creates an increased potential for wildfires, which can result in detrimental ecological change.

Construction of the Palen Solar Project could introduce non-native plants to the project area since ground-disturbing activities and vehicle use promote the introduction of exotic plants and could increase the likelihood of larger fires in the future. Indirect impacts would result in changes to the vegetation communities and the wildlife supported by the communities as recolonization of burned areas may result in the establishment of different vegetation communities.

Because invasive species dry out earlier in the season and interconnect otherwise patchy native desert plants, non-native plant invasions can result in a landscape's increased susceptibility to wildfire and increased fire frequency and intensity beyond what is normal under natural conditions. Moreover, repeated fires are known to decrease the perennial plant cover and to aid the growth and spread of some non-native annual plants. Construction of the Proposed Action can therefore indirectly result in increased fire frequency in the desert environment. This increased susceptibility can put nearby properties, structures, personnel, and native habitats at risk of harm from wildfires (BLM, 2011).

Additionally, development of the site for utility-scale power generation would preclude some OHV use. This would result in decreased wildfire risks associated with recreational uses.

Alternative 1 – Reduced Footprint Alternative

The Reduced Footprint Alternative would eliminate use of the central desert wash, dividing the Project into two separate development areas. In general, the direct effects of this alternative would

be similar to those described for the Proposed Action. However, since the new the permanent disturbance area is reduced to 3,100 acres, the Reduced Footprint Alternative would result in less construction overall. Less construction decreases the amount of ground disturbance, smoking, refueling and vehicle operation, the potential for spilled fuels on paved roadways, and other construction-related activities. All the aforementioned activities can increase the potential for wildfires and negatively affect local vegetation and wildlife, especially since the vegetation-fuel types in the project study area are not fire-adapted. In addition, in comparison with the Proposed Action, the Reduced Footprint Alternative would reduce potential fire risk to project personnel and nearby landowners.

Indirect impacts from the Reduced Footprint Alternative are also similar to those described for the Proposed Action. These impacts include the potential spreading of invasive plants and the related increased potential for wildfires.

Alternative 2 – Avoidance Alternative

The Avoidance Alternative to the Proposed Action would limit developable land based in accordance with the DRECP Conservation Management Actions (CMAs). The effects of this alternative would be similar to those described for the Proposed Action. However, the resulting area available for project development would be reduced to 1,620 acres, which is less than 40% of the acreage of the Proposed Action. The Avoidance Alternative would therefore potentially result in substantially reduced impacts of project construction, operation, and decommissioning, resulting in a decrease in the potential for wildfires.

Indirect impacts from the Avoidance Alternative are also similar to those described for the Proposed Action and include the potential spreading of invasive plants and the related increased potential for wildfires. However, the magnitude of the indirect effects of this alternative would be less than the Proposed Action because the Avoidance Alternative would result in much less ground disturbance and preclusion of OHV use compared to the Proposed Action as it decreases the size of the Project by roughly 50 percent.

No Action Alternative

A denial of the ROW application CACA-48810 would result in the No Action Alternative since a ROW grant would not be authorized. No new structures or facilities constructed or operated on the site and no ground disturbance would occur. As a result, project-related wildfires and their effects on people and the environment would not occur. However, because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.20.3 Cumulative Effects

Geographic Scope

The geographic extent for the consideration of cumulative effects to wildland fire ecology is eastern Riverside County It includes the projects described in Section 4.1.4 (Cumulative Impact Scenario) Tables 4.1-1 and 4.1-2. Although potential fires would not be constrained by political boundaries, the natural conditions and existing fire response infrastructure are such that it would be reasonable to assume that a fire could be contained within this area. Multiple projects can increase the frequency of fires in the same location or potentially spread to the same areas.

The existing and foreseeable projects that have the potential to combine with the Project to result in a cumulative effect include all the projects listed in Table 4.1-1 and Table 4.1-2, because they all would involve creation of fire risk from operation (if they are already constructed) or from construction and operation (if not yet constructed).

Cumulative Impact Analysis

Potential cumulative impacts could occur for the entire duration of the Proposed Action, from the initiation of construction to the conclusion of facility closure and site restoration. The projects listed in Tables 4.1-1 and 4.1-2 may contribute to the impacts of the Proposed Action or action alternatives, resulting in cumulative impacts to wildland fire ecology to nearby projects and landowners.

Existing conditions within the cumulative impacts area reflect a combination of the natural condition and the effects of past actions. Any of the cumulative projects that would install and operate transmission lines and/or use gas or diesel-powered equipment (including motor vehicles) that could spark or otherwise provide an ignition source that could result in fire risks that combine to cause or create a cumulative impact. In addition, the increased human presence and disturbance caused by construction and operation throughout the area that would occur as foreseeable projects are developed could advance the rate of invasion by non-native vegetation and, thereby, contribute to fire fuel-loading that would burn with higher flames and hotter temperatures leading to possible containment issues.

Potential cumulative wildfire effects could occur over the course of 30 or more years, encompassing the entire lifespan of the Project, from construction and operation and maintenance, through closure and decommissioning. The BLM and RCFD are expected to respond to a fire on the proposed site and other development sites and facilities along the I-10. The availability of prompt fire response would potentially be impacted by continual development along the I-10 corridor.

Cumulative impacts would vary by alternative, only to the degree to which direct and indirect impacts would vary by alternative. The contribution of impacts from the action alternatives is not expected to vary materially from the Proposed Action because similar types of construction, operation and maintenance, and closure and decommissioning activities would occur. Development of the site for utility-scale power generation would preclude some OHV use, thereby decreasing cumulative wildfire risks associated with recreational uses.

No Action Alternative. Wildfire risks would continue to be associated with OHV and other recreational use of the area, so the Proposed Action and alternatives would not contribute a beneficial impact in this respect relating to wildland fire risk. Because construction and project development would not occur under the No Action alternative, the Project would not contribute to adverse cumulative effects. However, since the ROW application area is located within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to solar, wind, or geothermal energy development in the future. This land could be developed using this or another solar power technology in the future, potentially resulting in cumulative impacts to wildland fire ecology of a nature and type to be evaluated when sufficient detail is known about any such future proposal.

4.20.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are three APMs relevant to wildland fire ecology (Section 2.2.7, Chapter 2). Table 4.20-1 explains how these measures reduce project effects, and how they relate to mitigation measures recommended below.

Table 4.20-1. Applicant Proposed Measures for Wildland Fire Ecology

APM #	Text	Explanation
APM-4	Consistent with BLM state and national policies and guidance, integrated weed management actions, will be carried out during all phases of activities, as appropriate, and at a minimum will include the following: ▪ Thoroughly clean the tires and undercarriage of vehicles entering or reentering the project site to remove potential weeds. ▪ Store project vehicles on site in designated areas to minimize the need for multiple washings whenever vehicles re-enter the project site. ▪ Properly maintain vehicle wash and inspection stations to minimize the introduction of invasive weeds or subsidy of invasive weeds. ▪ Closely monitor the types of materials brought onto the site to avoid the introduction of invasive weeds and non-native species. ▪ Reestablish native vegetation quickly on disturbed sites. ▪ Monitor and quickly implement control measures to ensure early detection and eradication of weed invasions to avoid the spread of invasive weeds and non-native species on site and to adjacent off-site areas. ▪ Use certified weed-free mulch, straw, hay bales, or equivalent fabricated materials for installing sediment barriers.	Augmented by Mitigation Measure VEG-9 (Integrated Weed Management Plan), APM-4 further reduces project impacts related to non-native species that can increase fire risks.

Table 4.20-1. Applicant Proposed Measures for Wildland Fire Ecology

APM #	Text	Explanation
APM-5	Implement the following measures for controlling nuisance animals and invasive species: ▪ No fumigant, treated bait, or other means of poisoning nuisance animals including rodenticides will be used in areas where Focus and BLM Special Status Species are known or suspected to occur. ▪ Manage the use of widely spread herbicides and do not apply herbicides effective against dicotyledonous plants within 1,000 feet from the edge of a 100-year floodplain, stream and wash channels, and riparian vegetation or to soils less than 25 feet from the edge of drains. Exceptions will be made when targeting the base and roots of invasive riparian species such as tamarisk and *Arundo donax* (giant reed). Manage herbicides consistent with the most current national and California BLM policies. ▪ Minimize herbicide, pesticide, and insecticide treatment in areas that have a high risk for groundwater contamination. Clean and dispose of pesticide containers and equipment following professional standards. Avoid use of pesticides and cleaning containers and equipment in or near surface or subsurface water. ▪ When near surface or subsurface water, restrict pesticide use to those products labeled safe for use in/near water and safe for aquatic species of animals and plants.	Augmented by Mitigation Measure VEG-9 (Integrated Weed Management Plan), APM-5 further reduces project impacts related to non-native species that can increase fire risks.
APM-43	Implement the following standard practice for fire prevention/protection: ▪ Implement site-specific fire prevention/protection actions particular to the construction and operation of the Project that include procedures for reducing fires while minimizing the necessary amount of vegetation clearing, fuel modification, and other construction-related activities. At a minimum these actions will include designating site fire coordinators, providing adequate fire suppression equipment (including in vehicles), and establishing emergency response information relevant to the construction site.	Augmented by Mitigation Measure WORKER SAFETY-7: (Fire Protection/Response Infrastructure), APM-43 further reduces project impacts related to increased fire risks.

The Proposed Action and all alternatives except for No Action Alternative would result in adverse impacts related to increased fire risk. Based on the analysis provided in this section, the following previously proposed mitigation measures for the PSPP related to public health and safety (Section 4.11) and vegetation resources (Section 4.17) are recommended to reduce potential fire risks of the Proposed Action by addressing spilled hazardous materials that are potentially flammable and preventing the spread of non-native vegetation. The full text of the measures is provided in Sections 4.11 and 4.17.

Public Health and Safety (Section 4.11)

- HAZ-2, Hazardous Materials Management Plan (HMBP) (Previously PSPP MM HAZ-2)
- HAZ-3, Safety Management Plan (Previously PSPP MM HAZ-3)
- WASTE-9, Accidental Spill Remediation (Previously PSPP MM WASTE-9)
- WORKER SAFETY-7, Fire Protection/Response Infrastructure (Previously PSPP MM WORKER SAFETY-7)

Vegetation Resources (Section 4.17)

- VEG-9, Integrated Weed Management Plan (Previously PSPP MM BIO-14)

4.20.5 Residual Effects after Implementation Mitigation Measures

Residual impacts related to increased fire risks would exist even with implementation of relevant mitigation measures. Construction and operation of the Proposed Action or alternatives would potentially still result in occurrences of wildfires, for instance through the accidental spill of hazardous materials that can stimulate fires. In addition, changes to the vegetation communities and the wildlife supported by the communities are still possible, such as through the occurrence of a wildfire or the reestablishment of the vegetation in the project area after decommissioning. With implementation of the mitigation measures, the residual effect would be minor.

4.20.6 Unavoidable Adverse Impacts

Construction and operation of the Proposed Action or alternatives would result in unavoidable adverse impacts related to increased fire risk through construction and operation activities that can directly stimulate wildfires, the introduction of non-native plants to the project area through ground-disturbing activities and vehicle use that increase the likelihood of larger fires in the future, and the interruption of OHV use for recreation purposes in the area. With implementation of the mitigation measures, the risk would be low.

4.20.7 CEQA Significance Thresholds and Determinations

The significance criteria listed below are from the Environmental Checklist Form in Appendix G of the CEQA Guidelines. They are used to determine whether the Proposed Action or alternatives would result in significant impacts under CEQA related to wildland fire ecology. The Proposed Action and alternatives would result in a significant impact related to wildland fire ecology if they would:

WF-1 Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

WF-1 Expose People or Structure to a Significant Risk Involving Wildland Fires

During construction, operation and maintenance, and decommissioning of the Project or action alternatives, the risk of wildfires would potentially be increased by the combustion of native materials, smoking, and refueling and operating vehicles and other equipment and hazardous materials off road (CEQA significance criterion WF-1). APM-43, Plan of Development (POD)

Appendix R: Fire Plan for the Palen Solar Project, and Mitigation Measure WORKER SAFETY-7 (Fire Protection/Response Infrastructure) establish standards and practices that would minimize the risk of a wildfire and, in the event of fire, provide for immediate suppression and notification.

Construction, operation, and decommissioning could also introduce non-native plants to the Project's landscape. As described in Section 4.20.2 above, certain non-native plants tend to increase a landscape's susceptibility to wildfire and non-native plant invasions can result in increased fire frequency beyond what is normal under native conditions, putting nearby properties, structures, personnel, and native habitats at risk of harm from wildfire and resulting in a significant impact. With the implementation of APM-43, Appendix R and Mitigation Measure WORKER SAFETY-7, potential impacts from wildfire, namely risk of loss, injury, or death to people or structures, would be less than significant.

The No Action Alternative would not have any impacts related to wildland fires. Under this alternative, the Proposed Action would not be constructed.

Cumulative Impacts

As described in Section 4.20.3, the effects of the Proposed Action or action alternatives, when considered with existing and proposed projects in the area, could present a cumulatively considerable impact on wildland fire ecology. The effects of surrounding projects on emergency response to fire could be cumulatively substantial. The likelihood of simultaneous fires at more than one project site is low, but such a circumstance could strain local emergency response capacity. With implementation of APM-43, POD Appendix R, and Mitigation Measure WORKER SAFETY-7, potential impacts from wildland fire would be less than significant.

Under the No Action Alternative, wildfire risks would continue to be associated with OHV and other recreational use of the area. The Project would not contribute to adverse cumulative effects related to wildland fires because construction and project development would not occur under the No Action alternative. However, since the ROW application area is located within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to solar, wind, or geothermal energy development in the future. This land could be developed using this or another solar power technology in the future, potentially resulting in cumulative impacts to wildland fire ecology of a nature and type to be evaluated when sufficient detail is known about any such future proposal.

4.21 Wildlife Resources

4.21.1 Impact Assessment Methodology

This section describes the Project's potential impacts to wildlife resources, including potential direct, indirect and cumulative impacts related to construction, operation and maintenance, and closure and decommissioning of the Proposed Action and alternatives. As described in Section 4.17 (Vegetation Resources), the Proposed Action would disturb 3,381 acres within a proposed 4,221-acre right-of-way for the solar facility, and the gen-tie line would be located in a 166-acre right-of-way (ROW). Mitigation measures are identified, where appropriate, to address impacts to wildlife resources. Residual impacts and significant unavoidable adverse impacts also are evaluated.

This analysis is based primarily on information in the Biological Resources Technical Report for the Palen Solar Project (Ironwood, 2016) with additional information from the following sources: the PSPP PA/FEIS (BLM, 2011), PSPP Revised Staff Assessment (CEC, 2010), PSEGS DSEIS (BLM, 2013), and PSEGS Staff Assessment (CEC, 2013); as well as information contained within the BLM's Northern and Eastern Colorado Desert Coordinated Management Plan (NECO), March 2008 Handbook H-1740-2, Integrated Vegetation Management Handbook (BLM, 2008), and the Desert Renewable Energy Conservation Plan (DRECP; BLM, 2015).

Mitigation Measures and Applicant Proposed Measures

This analysis considered the relevant mitigation measures (MMs) presented in the PSPP analysis in the BLM 2011 Final EIS and CEC 2010 Revised Staff Assessment (RSA). Mitigation measures are referenced by title and number in the discussion of effects (Section 4.21.2). The full text of each measure, or reference to its location in this SEIS, is presented in Section 4.21.4.

Applicant Proposed Measures (APMs) are presented in Chapter 2, Section 2.2.7. APMs relevant to wildlife resources are APMs 1, 2, 4 through 7, 9 through 20, 43, and 52. APMs relevant to both vegetation and wildlife resources, including wildlife habitat, are discussed in Section 4.17 (Vegetation Resources).

4.21.2 Direct and Indirect Effects

Direct impacts are the direct or immediate effects of the Proposed Action on wildlife resources. Examples of direct impacts include mortality, injury, or displacement of special-status animals; loss or degradation of native habitat; interference with wildlife movement or migration; and disturbance to wildlife and habitat from noise and light. Indirect impacts are those effects that are caused by or will result from the Project, later in time or farther removed in distance, but are still reasonably certain to occur. Examples of indirect effects to native habitat include erosion, sedimentation, and introduction of invasive species that may cause habitat degradation. An example of an indirect effect to wildlife is increased predation due to certain habitat alterations (e.g., creation of perch sites or "subsidies" for predators).

The term *habitat* refers to the environment and ecological conditions where a species is found. Wildlife habitat is generally described in terms of vegetation, though a more thorough explana-

tion often must encompass further detail, such as availability or proximity to water; suitable nesting or denning sites; shade; foraging perches; cover sites to escape from predators; soils that are suitable for burrowing or hiding; limited noise and disturbance; and many other factors that are unique to each species. Vegetation reflects many aspects of habitat, including regional climate, physical structure, and biological productivity and food resources (for many wildlife species). Thus, vegetation is a useful overarching descriptor for habitat and it is the primary factor in this analysis of impacts to wildlife habitat. Where additional details of habitat suitability are necessary to this analysis, they are provided in the discussion of special-status wildlife species in Section 3.21 (Wildlife Resources). Examples include the aeolian sand requirements for Mojave fringe-toed lizard, and the availability of shade, cover, and water for burro deer.

Some of the Project's impacts to wildlife can be quantified in terms of acreage (e.g., acreage of habitat that would be affected by the Project). Other impacts (e.g., adverse effects of noise on wildlife) cannot be directly quantified.

Impact analyses typically characterize effects to wildlife and habitat as temporary or permanent, with a permanent impact referring to areas that are paved or otherwise precluded from restoration to a pre-project state. In desert ecosystems, the definition of "permanent" and "temporary" must reflect the slow recovery rates of plant communities; see Section 4.17.2 (Vegetation Resources). Consequently, due to the slow recovery rates of plant communities in desert ecosystems, impacts of the Proposed Action and alternatives are considered permanent.

Each potential impact to wildlife is described below, indicating whether it is a direct or indirect impact; whether its effects would be permanent, long-term or short-term; and whether it would occur during the construction or O&M phase. Impacts specific to the decommissioning phase are addressed separately.

The Project Description includes a series of Applicant Proposed Measures (APMs) applicable to biological resources. APMs 1, 2, 5, and 7 are general measures that would benefit all biological resources. APM-1 requires biological monitoring during pre-construction, construction, and decommissioning activities to ensure avoidance and minimization measures are implemented. APM-2 requires a worker education program to train workers on the required measures for avoiding and minimizing impacts to biological resources. APM-5 requires the appropriate use and disposal of herbicides and pesticides. APM-7 requires various impact and avoidance measures to be used as general standard practices.

In addition to the APMs, this section of the Supplemental EIS/EIR identifies a series of mitigation measures to address each impact to vegetation resources. Several of the mitigation measures identified here are also identified in Section 4.17 (Vegetation Resources) because they would mitigate impacts to both vegetation resources and wildlife resources. Please see Section 4.17 for the full text of these measures (Mitigation Measures VEG-1 through VEG-8). The full text of wildlife mitigation measures is included in Section 4.21.4. Mitigation Measures VEG-1 through VEG-8 are general measures that would mitigate both vegetation and wildlife impacts. VEG-1 through VEG-5 require qualified biologists, with authority to implement mitigation measures necessary to prevent impacts to biological resources, to be on site during all construction activities. VEG-6 requires a Worker Environmental Awareness Program to train all workers to avoid impacts to sensitive species and their habitats. VEG-7 requires a Biological Resources Mitiga-

tion Implementation and Monitoring Plan that incorporates the mitigation and compliance measures required by local, state, and federal agencies regarding biological resources, including wildlife. VEG-8 specifies a series of Best Management Practices and other impact avoidance and minimization measures.

This section addresses the impacts of the Proposed Action, followed by the impacts of the two alternatives and the No Action Alternative.

Proposed Action

Most of the solar facility site would be impacted by some form of soil and vegetation disturbance, either from compaction, micro-grading, or disc-and-roll grading for installation of the solar arrays and associated facilities. A security fence would be installed around the perimeter of the solar facility. The gen-tie line would be located in a 166-acre ROW; disturbance to the ROW would include grading and vegetation removal for transmission structures, access, and work areas (e.g., pull sites and staging areas) but much of the ROW would not be directly disturbed by project construction.

Water would be drawn from up to seven onsite wells placed throughout the project site to facilitate construction watering and operational water needs. An offsite source of water may also be used for construction watering and would come from wells located in Desert Center. Three temporary large storage tanks would be used for water storage throughout the site during construction. A permanent large storage tank would be used for O&M. An estimated 497 to 700 acre-feet of water per year would be needed during the 30-month construction period. Operational water usage is estimated at 15 to 41 acre-feet per year.

Solar field development would maintain sheet flow of stormwater runoff where possible, with water exiting the site in existing natural contours and flows. Intermittent streams would be identified and protected within the project area. The use of retention basins would be determined upon final engineering of the project site. Existing small to moderate ephemeral washes would remain intact at locations capable of being traversed by installation equipment. Where paved roads cross larger ephemeral washes, culverts would be constructed to withstand a 100-year, 24-hour storm event.

The Project's lifespan is estimated to be approximately 30 years, after which, if permanent closure is appropriate, decommissioning would occur. See Section 2 (Proposed Action and Alternatives) for additional details regarding project facilities, construction, O&M, and decommissioning.

Proposed Action: Direct Effects

Sonoran creosote bush scrub, desert dry wash woodland, and other habitat within the project site provides foraging, cover, and breeding habitat for wildlife, including special status wildlife. Construction activities would directly affect wildlife in multiple ways, including the long-term or permanent loss of habitat, disturbance from noise and human activity, injury or mortality of animals, and interference with wildlife movement. Long-term and permanent impacts to vegetation and habitat are defined in Section 4.17.2 (Vegetation Resources). Although the project site would ultimately be decommissioned, and decommissioning may include efforts to restore pre-project habitat values, it is unknown whether restoration will be recommended, and whether it

would be feasible, considering the proposed long-term land use. Therefore, impacts to vegetation and habitat that will last for the life of the Project are presumed to be "permanent" in this analysis.

Project construction would result in permanent and long-term impacts to the solar facility site (i.e., all native vegetation on the site) and portions of the gen-tie ROW, including Sonoran creosote bush scrub, desert dry wash woodland, stabilized and partially stabilized desert dunes, and unvegetated ephemeral dry wash (see Table 4.17-1 in Section 4.17 Vegetation Resources). Following construction, any remaining or recovering vegetation and habitat would be unsuitable for most species, particularly species with specific habitat requirements, including most special status wildlife species. Vegetation and habitat conditions following construction may remain suitable for some common species, such as side-blotched lizard, house finch, northern mockingbird, and desert cottontail. The Project's direct adverse impacts to wildlife habitat would be substantial but can be reduced or offset through the mitigation measures identified in Section 4.17 (Vegetation Resources), which specify requirements for monitoring, reporting, managing, and compensating for biological resources impacts.

Construction would generally cause mortality of mammals and reptiles, which could be hindered or prevented from escaping the construction site by the Project's perimeter fencing. Mortality could also result from trampling or crushing during clearing, grading, or excavation of trenches for underground power collection lines and water storage ponds/retention basins. Potential mortality to native birds and nestlings is discussed below. This direct adverse impact to wildlife could be substantial but can be somewhat reduced through provisions specified in Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures). This measure would reduce wildlife mortality through a variety of strategies, including exclusion fencing to keep animals out of construction areas; closing or covering trenches, open pipes, or other potential traps to wildlife; speed limits and other measures to minimize road strikes; and the salvage or relocation of animals during initial clearing and grading, as practicable. Even with implementation of MM VEG-8, initial clearing and site preparation work would likely cause mortality among most small mammals and reptiles which would be unable to escape.

Noise

Construction. Construction would result in a temporary, although relatively long-term (30-month) increase in ambient noise in the project site and adjacent areas. Animals rely on hearing to avoid predators, obtain food, and communicate. Excessive construction noise could interfere with normal wildlife communication, potentially affecting contact between mated birds, warning and distress calls that signify predators and other threats, and feeding behavior and protection of young (CEC, 2010). High noise levels also may render an otherwise suitable nesting area unsuitable or result in abandonment of active nesting sites. Behavioral and physiological responses to noise and vibration could cause injury, energy loss (from movement away from noise source), a decrease in food intake, habitat avoidance and abandonment, and reproductive losses (Hunsaker, 2001; NPS, 1994).

Nesting habitat for numerous birds is found in creosote scrub and desert dry wash woodland adjacent to the project site. More distant from the site, bighorn sheep breeding habitat, as

identified in the NECO plan, is located in the Palen Mountains, approximately 2.5 miles northeast of the project site.

Assuming average construction noise of 85 dBA at 50 feet from the noise center and noise attenuation of 6 dBA per doubling of distance (CEC, 2010), normal construction noise would attenuate to about 60 dBA approximately 800 feet (0.15 miles) from the noise center. Therefore, average construction noise levels would typically be less than 60 dBA in the bighorn sheep breeding habitat. Noise from pile driving could be expected to reach 101 dBA at a distance of 50 feet and attenuate to less than 59 dBA at a distance of 2.5 miles from the site which would not be loud enough to substantially impact wildlife in the bighorn sheep breeding habitat.

APM-6 requires measures to avoid and minimize noise impacts on special status species. Elevated noise from pile driving and other construction activities could adversely affect the breeding, roosting, or foraging activities of sensitive wildlife proximate to the project area. To reduce and avoid these potential noise impacts, Mitigation Measure VEG-8 would supplement APM-6 by requiring avoidance of loud construction activities (i.e., pile driving) that would result in noise levels over 65 dBA in nesting habitat (such as dry desert wash woodland) between February 15 and April 15, the height of the bird breeding season.

Operations and Maintenance. Operational noise sources include motorized panel tracking and maintenance activities (e.g., panel washing). Any occasional excessive noise from occasional O&M activities would result in impacts similar to those identified above in connection with construction noise. Substantial impacts to surrounding wildlife from operational noise are not anticipated and no mitigation is proposed.

Lighting

Construction and operation of the Proposed Action would require onsite nighttime lighting for safety and security, which could affect wildlife activities in the vicinity. Because of the minimal other manmade sources of light in this remote area, when viewed from nearby offsite locations, the overall change in ambient lighting conditions at the project site may be substantial.

Lighting during construction would be limited to the staging area for the construction trailers, parking area, and site security facilities and would be limited to that needed to ensure safety. It would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area. The level and intensity of lighting during operations would be the minimum needed, limited to areas required for safety, security, and operation such as the on-site substation. Security lights would use motion sensors that would be triggered by movement at a human's height. Portable lighting may be used occasionally and temporarily for maintenance activities or emergency repairs during operations. No aviation lighting would be required because all structures would be lower than the 200-foot height standard.

Disturbance to wildlife from lights would be minimized by Mitigation Measure VEG-8, which includes specifications that facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat, and by VIS-3 (Temporary and Permanent Exterior Lighting), which requires lighting to be directed downward and the minimum brightness

necessary for safety and security; see Section 4-18 (Visual Resources). These measures would adequately mitigate potential wildlife impacts of lighting.

Wildlife Movement and Connectivity

Section 3.21 describes the existing conditions affecting wildlife movement and connectivity in the project vicinity, particularly the I-10 Freeway and several large box culverts or underpasses that allow safe wildlife movement beneath the freeway. The three large box culverts, ranging in width from 90 to 150 feet, would not be directly affected by the Project and they would remain open to wildlife movement. Land use conversion and perimeter fencing for the Project could disrupt wildlife access near the north side of these underpasses, causing animals to travel longer distances, partly in close proximity to the freeway, and possibly away from established movement routes, where they may be more vulnerable to predation. Wildlife north of the project site attempting to move south would be diverted to the east or west around the Project. Wildlife located south of the freeway, moving to the north through the existing box culverts, would encounter the Project's perimeter fence. Due to the length of the fence, wildlife may be unable to find their way around the Project by heading east or west to move farther northward, so would return back beneath the freeway, cross onto the freeway, or may be diverted to the east or west around the project site.

The Proposed Action could impede wildlife movement for wide-ranging wildlife such as burro deer, kit fox, coyotes, and badgers, and on a population level could impede gene flow for desert tortoises. Desert tortoises are particularly vulnerable to road mortality, and there is no tortoise-proof fencing along this segment of I-10. Therefore, desert tortoises moving around the project site may be more likely to experience increased rates of vehicular-related mortality due to proximity to I-10

The width of wildlife movement habitat between the I-10 and southern project fence line, or through the project site (for Alternatives 1 and 2, which include an undeveloped movement corridor along the central wash) affects the utility and value of these areas for some terrestrial wildlife species. California Department of Fish and Wildlife biologists have recommended a 1,700-foot buffer area to minimize potential impacts to burro deer movement beneath the Freeway. Table 4.21-1 provides the width of movement areas for the Proposed Action and alternatives.

In addition to potential effects on connectivity among populations, the Project could interfere with local-scale wildlife movement by any species unable to cross the facilities. For example, prey species could become more vulnerable to predators if the security fence prevents them from escaping. This effect has been reported at the Ivanpah Solar Electric Generation Station with regard to roadrunners becoming more vulnerable to coyote predation (Los Angeles Times, 2016).

Table 4.21-1. Comparison of Width of Movement Areas for Project Alternatives (feet)

Impacts	Proposed Project	Alternative 1 (Reduced Footprint)	Alternative 2 (Avoidance)
Width between I-10 and project fenceline*	800–3,500	800–3,500	950–3,300
Width of open corridor between fencelines along central wash*	None	1,700–2,300	2,500–3,700

*For Alternative 2 (Avoidance) the width is to the development area boundary as no project fencelines are specified for that alternative.

To mitigate impacts to wildlife habitat connectivity for desert tortoise and other species, Mitigation Measure WIL-1 (Desert Tortoise Protection) would require construction of desert tortoise exclusion fencing on both sides of I-10 to direct desert tortoise and other wildlife to safe passage under the freeway or at another site to provide equivalent benefit to desert tortoises. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) would require designing all permanent project fencing to prevent potential entanglement of deer and other wildlife.

Special Status Wildlife

Couch's Spadefoot Toad. The project site is near the western margin of Couch's spadefoot toad range and habitat appears to be minimally suitable. The project site was assessed for evidence of ponding that could support breeding (ponding that would last about nine days) and these areas were not observed. There is very limited potential for Couch's spadefoot toad breeding habitat on the project site. If this species is present in the project site, impacts from construction could include loss of habitat and direct mortality during grading and construction. Construction activities that create pits or depressions during the summer rains could attract toads which then would be vulnerable to additional construction impacts. During project construction and operation, Couch's spadefoot toads could be crushed on access roads. Due to the low probability of occurrence, the Project is not expected to affect Couch's spadefoot toads or its habitat and no mitigation is proposed.

Desert Tortoise. Few, if any, desert tortoise occupy the solar facility site. The most recent surveys, performed in spring of 2016, identified no live desert tortoises, no active sign, and no deteriorated sign within the solar facility portion of the project site. Active tortoise sign (one active burrow with tracks and scat and two records of scat) was found along the gen-tie route. It is likely that few, if any, live desert tortoise would be detected during pre-construction clearance surveys or related work. Nonetheless, construction, operation and decommissioning of the Proposed Action could have direct and indirect impacts on desert tortoises.

The solar facility site consists of two desert tortoise habitat zones, based on the differing soil conditions. The eastern portion of the site is characterized by shallow sand sheets and dunes that support ammophilous (living in sand) species and correlates with modeled desert tortoise habitat (Nussear et al., 2009) with a value of less than 0.4. This value falls below the 0.5 value used in previous assessments as the threshold for suitable desert tortoise habitat (USFWS, 2011 and 2012). Higher-quality, but apparently unoccupied habitat is located in the western part of the solar facility site. Higher-quality habitat with sign of recent tortoise activity is found along the western 2 miles of the gen-tie route.

Approximately 207 acres of the project area are within designated desert tortoise critical habitat in the Chuckwalla Desert Tortoise Critical Habitat Unit (Chuckwalla CHU); however, no solar facilities infrastructure would be located within the CHU. The western end of the gen-tie route overlaps an additional approximately 37 acres of the CHU; gen-tie structures would be located within the CHU.

Potential direct impacts to the desert tortoise from the Proposed Action include the permanent loss of 3,381 acres of low to moderate quality occupied habitat (Ironwood, 2016; the acreage

includes all vegetation types within the solar facility site except the stabilized and partially stabilized dunes), and scattered impacts to higher-quality habitat along the gen-tie line, including habitat within the CHU. In addition, the Project would contribute to fragmentation and disturbance of adjacent habitat, disruption of connectivity corridors between CHUs located north and south of I-10, and mortality from tortoises moving around the site and being directed towards I-10 (rather than following existing washes extending beneath the freeway corridor).

During construction of the Project, desert tortoises could be harmed during clearing, grading, and trenching activities or may become entrapped within open trenches and pipes. Construction activities could also result in direct mortality, injury, or harassment of tortoises as a result of encounters with vehicles or heavy equipment. Other direct effects could include individual tortoises being crushed or entombed in their burrows, collection or vandalism, disruption of tortoise behavior during construction or operation of facilities, disturbance by noise or vibrations from the heavy equipment, and injury or mortality from encounters with workers' or visitors' pets. Desert tortoises may also be attracted to the construction area by application of water to control dust, placing them at higher risk of injury or mortality. Increased human activity and vehicle travel would could disturb, injure, or kill individual tortoises. Also, tortoises may seek shade and thermal cover by taking shelter under parked vehicles and can be killed, injured, or harassed when the vehicle is moved.

Direct impacts may result from relocation or translocation efforts, such as injury or death from improper capture or handling techniques, as well as inherent risks and uncertainties in moving desert tortoises. Capturing, handling, and relocating desert tortoises from the site could result in harassment and possibly death or injury. Tortoises may die or become injured by capture and relocation if these methods are performed improperly, particularly during extreme temperatures, or if such handling causes them to void their bladders and they are not rehydrated afterward. Further, handling desert tortoise could spread pathogens among resident and translocated tortoises. For tortoises near but not within the project area, habitat loss would likely result in displacement stress that could result in loss of vigor, increased exposure, increased risk of predation, increased intra-species competition, and possibly death. Tortoises moved outside their home ranges would likely attempt to return to the area from which they were moved, making it difficult to isolate them from the potential adverse effects of project construction.

The area south of the solar facility site leads to three sizeable box culverts that provide safe wildlife passage beneath the I-10 Freeway (see Wildlife Movement and Connectivity, above). These roadway crossings provide for dispersal and gene flow between desert tortoise populations in the Chuckwalla and Chemehuevi CHUs. On a regional scale, the site is situated outside priority habitat and linkages (Figure 3.21-3; BLM, 2015). However, the site may be important for desert tortoise movements between higher-quality habitats available in these CHUs, located in the Palen Mountains to the northeast and the Chuckwalla Mountains to the south. Therefore, while the habitat in this area is relatively low-quality, the area has been occupied (based on the presence of sign during earlier field surveys) and supports the connectivity function of critical habitat designation. The Proposed Action could disrupt local movement patterns by preventing or hindering north-south movement, as described under Wildlife Movement and Connectivity, above.

Mitigation Measures WIL-1 (Desert Tortoise Protection), WIL-2 (Desert Tortoise Relocation/ Translocation Plan), and WIL-3 (Desert Tortoise Compliance Verification) and APM-10 would avoid and minimize potential take of desert tortoise during project construction and operation. Mitigation Measure WIL-1 would require installation of desert tortoise exclusionary fencing around portions of the project site (including access roads) where desert tortoises are likely to be found. APM-10 also requires desert tortoise exclusion fencing around work areas. Mitigation Measure WIL-2 would require the development and implementation of a desert tortoise relocation and translocation plan to move any tortoises currently living in the project site to identified relocation or translocation sites. The Desert Tortoise Relocation/Translocation Plan would analyze whether relocation or translocation is an appropriate action; identify and prioritize potentially suitable locations for translocation; evaluate desert tortoise handling and transport considerations (including temperature) and animal health considerations; describe translocation scheduling, site preparation and management; and specify monitoring and reporting activities for evaluating success of translocation. Mitigation Measure WIL-3 would require verification that all desert tortoise impact avoidance, minimization, and compensation measures have been implemented.

To minimize the risks of increased traffic fatality and other vehicle hazards associated with the Project, Mitigation Measure VEG-8 would require confining project vehicular traffic to existing routes of travel, prohibiting cross country vehicle and equipment use outside designated work areas, and imposing a speed limit of 25 miles per hour. APM-15 further reduces the speed limit as it requires a speed limit of 15 miles per hour in areas where desert tortoise may be impacted.

To offset the loss of desert tortoise habitat, Mitigation Measure WIL-4 (Desert Tortoise Compensatory Mitigation) would require habitat compensation at a 1:1 ratio for project impacts to areas outside of critical habitat and a 5:1 ratio for areas within the Chuckwalla CHU. This measure would also require land acquisitions of parcels and/or restoration and enhancement of degraded BLM administered lands in ACECs and/or California Desert National Conservation Lands that contribute to desert tortoise habitat connectivity and build linkages between desert tortoise populations and designated critical habitat.

Other mitigation measures would also avoid and minimize impacts to desert tortoise. Mitigation Measures VEG-1 through VEG-5 would require qualified biologists, to monitor construction activities and mitigation compliance. Mitigation Measure VEG-6 would require a Worker Environmental Awareness Program (WEAP) to train all workers to avoid impacts to sensitive species and their habitats. Mitigation Measure VEG-7 would require the Applicant to prepare and implement a Biological Resources Mitigation Implementation and Monitoring Plan for biological resources. Mitigation Measure VEG-8 describes Best Management Practices and other impact avoidance and minimization measures, such as speed limits on project roads, measures to avoid entrapment of wildlife in trenches, pipes, or culverts, and measures to minimize standing water. APMs would also require biological monitoring (APM-1), WEAP training (APM-2), and Best Management Practices and general avoidance and minimization measures (APM-6, APM-7). APM-11 requires inspection of pipes and other materials for desert tortoise; APM-12 and APM-13 require biological monitoring of geotechnical boring to ensure no direct impacts to desert tortoise or burrows; APM-14 requires checking for desert tortoise before moving parked vehicles and specifies that any desert tortoise outside of exclusion fencing be allowed to move away on its

own or be moved to a safe location by a designated biologist to allow the vehicle to be moved with minimal disturbance to the tortoise.

Mojave Fringe-toed Lizard. The Proposed Action would directly impact Mojave fringe-toed lizard (MFTL) habitat in the northeastern portion of the project site (Ironwood, 2016). As described in Section 4.17 (Vegetation Resources), the Project would result in encroachment into the sand transport corridor, which is a critical component in the creation and preservation of MFTL habitat.

The Proposed Action would eliminate MFTL and other dune-dependent species' habitat in the northeastern portion of the project site, an area of active wind-blown sand with relatively shallow sand deposits, as well as areas of deeper and more active vegetated sand dunes.

The distribution of MFTL is naturally fragmented because of its specificity to a patchy habitat type, and many local MFTL populations are quite small (Murphy et al., 2006). This fragmented distribution leaves the species vulnerable to local extirpations from additional habitat disturbance and fragmentation. The MFTL population in the Chuckwalla Valley, along with a very small population in Joshua Tree National Park's Pinto Basin, represents its southernmost distribution (CEC, 2010).

Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation) would require that project impacts to stabilized and partially stabilized sand dunes be offset by compensation at a 3:1 ratio, consistent with recommendations in the NECO plan. For impacts to non-dune habitats occupied by Mojave fringe-toed lizards (sand fields vegetated with sparse creosote bush scrub) the mitigation ratio would be 1:1, with the requirement that acquired or restored mitigation lands be within the Chuckwalla or Palen sand transport corridor. It is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase. Therefore, compensation required under Mitigation Measure WIL-10 may be accomplished through acquisition and management of off-site habitat or, if suitable compensation habitat is not available, through off-site habitat enhancement and restoration (e.g., by controlling weeds or off-highway vehicle access). However, it is also uncertain whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values. Therefore, with implementation of Mitigation Measure WIL-10 to the extent it is feasible, the Proposed Action's direct effects on sand transport may remain only partially mitigated.

Other mitigation measures would avoid and minimize impacts to MFTL, including biological monitoring (VEG-1 through VEG-5), WEAP training (VEG-6), a Biological Resources Mitigation Implementation and Monitoring Plan (VEG-7), and other impact avoidance and minimization measures (VEG-8). APMs would also require biological monitoring (APM-1), WEAP training (APM-2), and Best Management Practices and general avoidance and minimization measures (APM-6, APM-7). APM-9 also requires clearance surveys for MFTL in suitable habitat.

Western Burrowing Owl. The project site contains suitable habitat for western burrowing owl and may support approximately four active burrows. Breeding season surveys in 2009 found two pairs of reproducing burrowing owls on the project site. Potential project-related direct impacts to burrowing owl includes loss of nest sites, eggs, or young; the permanent loss of breeding and foraging habitat; and disturbance of nesting and foraging activities for burrowing

owl pairs within or near the solar field or gen-tie line. Burrowing owls and their active burrows within the project site could be crushed or displaced during construction activities.

Mitigation Measure WIL-9 (Burrowing Owl Impact Avoidance, Minimization and Compensation Measures) would require the Applicant to prepare and implement a Burrowing Owl Mitigation Plan that would include the following elements: a description of identified suitable burrowing owl relocation sites; guidelines for enhancement of at least two natural burrows or creation of two artificial burrows per relocated owl if an existing burrowing owl or ground squirrel colony does not occur outside the project site; detailed methods and guidance for passive relocation of burrowing owls; and a description of proposed maintenance monitoring, reporting, and management of the relocated burrowing owls. This condition also requires acquisition and enhancement of a minimum of 78 acres of off-site suitable nesting and foraging burrowing owl habitat to mitigate the displacement of at least four owls. For burrows that cannot be avoided, APM-17 requires verification that burrows are empty and not supporting nesting or fledging owls prior to implementation of passive burrow exclusion. Other mitigation measures would also be implemented to avoid and minimize impacts, including biological monitoring (VEG-1 through VEG-5), WEAP training (VEG-6), a Biological Resources Mitigation Implementation and Monitoring Plan (VEG-7), and other impact avoidance and minimization measures (VEG-8). APMs would also require biological monitoring (APM-1), WEAP training (APM-2), and Best Management Practices and general avoidance and minimization measures (APM-6, APM-7).

Golden Eagle. The Proposed Action would impact suitable golden eagle foraging habitat throughout the project site. It is not expected to result in direct disturbance to nests or nesting golden eagles, based on guidance provided by the USFWS (72 FR 31132, June 5, 2007), which defines disturbance as an activity that would result in injury to an eagle or which would substantially interfere with normal breeding, feeding, or sheltering behavior.

Golden eagles can be extremely susceptible to disturbance during the breeding season (Andersen et al., 1990; USFWS, 2009), and adverse effects are possible from various human activities up to (and in some cases exceeding) one mile from a nest site (Whitfield et al., 2008). Surveys in 2010 documented two active nests approximately 7 miles southwest of the proposed site in the Chuckwalla Mountains. Surveys in 2012 and 2013 found no active nests within 10 miles of the project site.

Impacts to golden eagle foraging habitat would be offset by Mitigation Measures WIL-4 (Desert Tortoise Compensatory Mitigation) and VEG-11 (Mitigation for Impacts to State Waters). Acquisition and protection of off-site mitigation lands and/or restoration of degraded BLM administered lands in ACECs and/or California Desert National Conservation Lands that would be required by WIL-4 and VEG-11 would also provide protected golden eagle foraging grounds.

If golden eagle nesting occurs on transmission line towers within one mile of the project site, Mitigation Measure WIL-11 (Golden Eagle Inventory and Monitoring) would avoid and reduce potential impacts by requiring that golden eagle nest surveys be conducted during construction, in accordance with USFWS guidelines, to verify the status of golden eagle nesting territories within one mile of the project site. If active nests are detected, WIL-11 provides monitoring guidelines, performance standards, and adaptive management measures to avoid adverse impacts to golden eagles from project construction. APM-18 requires avoiding any activities that may

impact golden eagles within one mile of an active golden eagle nest; APM-19 requires golden eagle compensation in accordance with BLM and USFWS policies; and APM-20 requires contributions to a golden eagle monitoring program if the environmental analysis determines that the Project is likely to impact golden eagles.

Special Status and Migratory Birds. As described in Section 3.21 (Wildlife Resources), migratory birds, including a number of special-status bird species, occur or may occur at the project site. These species would be directly affected by the loss of foraging habitat, breeding habitat, cover, and roost sites.

Development of the Proposed Action would have more substantial adverse effects to resident breeding birds at the site (as opposed to migrants or winter residents) which include loggerhead shrike, California horned lark, and Le Conte's thrasher among others. These species would be adversely affected by the loss of desert dry wash woodland, vegetated ephemeral swales, and Sonoran creosote bush scrub. Le Conte's thrasher, loggerhead shrike and other wash-dependent species in particular would be affected by the loss of the cover, foraging and nesting opportunities provided by the structurally diverse and relatively lush desert dry wash woodland.

Other special status bird species may infrequently fly over the site or stop over on-site briefly during migration or dispersal periods. There is no suitable breeding or wintering habitat for these species within or near the project site, but bank swallow, vesper sparrow, willow flycatcher, yellow-headed blackbird, western yellow-billed cuckoo, Bell's vireo, and Ridgeway's [Yuma Ridgway's] rail have been recorded at the project site or at existing utility-scale solar projects in California. Additional information is provided in Appendix E of the BRTR (Ironwood, 2017). Impacts to these species could include loss of stopover migratory habitat, particularly desert dry wash woodland habitat; as well as the other potential impacts as described in the following paragraphs.

Other potential project-related direct impacts to birds include entrapment in pipes, collision with construction equipment, exposure to hazardous materials, and mortality or injury during grading or vegetation removal. Adult birds would typically flee from equipment, but nestlings and eggs would be vulnerable to impacts during project construction. If initial site grading or brush removal were to occur during nesting season, then it could destroy bird nests, including eggs or nestling birds. The loss of active bird nests or young is regulated by the federal Migratory Bird Treaty Act and California Fish and Game Code Sections 3503 and 3513, which protect active nests, eggs, and nestlings.

Loss of habitat would be offset by Mitigation Measures WIL-4 (Desert Tortoise Compensatory Mitigation), WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation), and VEG-11 (Mitigation for Impacts to State Waters). Acquisition and protection of off-site mitigation lands and/or restoration of degraded BLM administered lands in ACECs and/or California Desert National Conservation Lands that would be required by WIL-4, WIL-10, and VEG-11 would also provide protected foraging and breeding habitat for migratory and special status birds. APM-16 requires biological monitoring to avoid injury to Bendire's thrasher individuals, nests, eggs, or fledglings, if present.

Other direct impacts would be avoided and reduced by Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures) and WIL-6 (Pre-construction Nest Surveys and Avoid-

ance Measures). Mitigation Measure VEG-8 would require measures to avoid entrapment of wildlife and clean up spills of hazardous materials. WIL-6 would require preconstruction nest surveys and seasonal buffer areas for avoidance of active nests. Mitigation Measure WIL-7 (Bird and Bat Conservation Strategy) would require implementation of a plan to monitor death and injury of birds and bats from collisions with facility features and employ adaptive management as necessary. APM-52 requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the Project. This is further discussed under indirect impacts, below.

Yuma Mountain Lion. No definitive sign of mountain lion was observed during surveys of the project site, but suitable habitat and prey source (burro deer) are present. Direct impacts from the Proposed Action include loss of habitat. Loss of habitat would be offset by Mitigation Measures WIL-4 (Desert Tortoise Compensatory Mitigation) and VEG-11 (Mitigation for Impacts to State Waters). Acquisition and protection of off-site mitigation lands and/or restoration of degraded BLM administered lands in ACECs and/or California Desert National Conservation Lands that would be required by WIL-4 and VEG-11 would also provide protected habitat for Yuma mountain lion.

American Badger and Desert Kit Fox. American badger and desert kit fox occur throughout the project site. Potential direct impacts from the Proposed Action include the loss of foraging and denning habitat, crushing or entombing of animals in dens, increased risk of road kill hazard from construction traffic, and entrapment.

Mitigation Measure WIL-8 (American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures) would require pre-construction surveys and measures to avoid impacts to animals in dens. Mitigation Measure VEG-8 would require Best Management Practices and other impact avoidance and minimization measures, such as speed limits on project roads and measures to avoid entrapment of wildlife in trenches, pipes, and culverts. Other mitigation measures would also be implemented to avoid and minimize impacts, including biological monitoring (VEG-1 through VEG-5), WEAP training (VEG-6), and a Biological Resources Mitigation Implementation and Monitoring Plan (VEG-7). APMs would also require biological monitoring (APM-1), WEAP training (APM-2), and Best Management Practices and general avoidance and minimization measures (APM-6, APM-7). Loss of habitat would be offset by Mitigation Measures WIL-4 (Desert Tortoise Compensatory Mitigation) and VEG-11 (Mitigation for Impacts to State Waters). Acquisition and protection of off-site mitigation lands and/or restoration of degraded BLM administered lands in ACECs and/or California Desert National Conservation Lands that would be required by WIL-4 and VEG-11 would also provide protected habitat for American badger and desert kit fox.

Desert Bighorn Sheep. The project site is not within any of the bighorn sheep connectivity corridors identified in the NECO. NECO also identifies I-10 as a barrier to bighorn sheep movement (BLM CDD, 2002). The project site is not currently an important movement corridor because of the presence of I-10 and the width of the valley between suitable bighorn sheep habitat. The Society for Conservation of Bighorn Sheep has recommended a one-mile buffer from the upper edge of any solar development to the base of the mountains to protect spring foraging habitat. The project site is over one mile from the base of either the Chuckwalla Mountains or Palen Mountains. Barriers between the Chuckwalla Mountains and the project site (I-10) and the

Palen Mountains and the project site (sand dunes) further limit the availability and usefulness of the project site for spring foraging habitat.

Seeps, springs, or other water resources are currently available to bighorn sheep that occupy the Palen Mountains. Analysis of the potential effect of groundwater extraction for PSPP (2010) on bighorn sheep water sources determined that there would be no impact. Similarly, the Proposed Action, which would require substantially less groundwater extraction than PSPP, is unlikely to affect springs and seeps available for use by bighorn sheep (see Section 4.19, Water Resources).

The Proposed Action would not directly affect habitat within any connectivity corridors and would not conflict with Desert Bighorn Sheep Conservation goals and objectives outlined in the NECO. The Proposed Action would not substantially impact bighorn sheep habitat connectivity or foraging and no mitigation is proposed.

Burro Deer. Burro deer have been observed using large culverts under I-10 near the project site as movement corridors. Development of the Proposed Action within the Palen watershed could affect burro deer through loss of habitat and impairment of movement and connectivity. Loss of habitat would be offset by Mitigation Measures WIL-4 (Desert Tortoise Compensatory Mitigation) and VEG-11 (Mitigation for Impacts to State Waters). Acquisition and protection of off-site mitigation lands and/or restoration of degraded BLM administered lands in ACECs and/or California Desert National Conservation Lands that would be required by WIL-4 and VEG-11 would also provide protected habitat for burro deer.

Impacts to Wildlife Movement and Connectivity are described separately, above. California Department of Fish and Wildlife biologists have recommended a 1,700-foot buffer area to minimize potential impacts to burro deer movement beneath the freeway. The Proposed Action would provide a buffer area of 800 to 3,500 feet between the solar field's southern boundary fence and the I-10 freeway. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) would require designing all permanent project fencing to prevent potential entanglement of deer and other wildlife.

Special Status Bats. The project site supports foraging habitat for several special-status bat species. Project-related loss of bat foraging habitat would be offset by Mitigation Measures WIL-4 (Desert Tortoise Compensatory Mitigation) and VEG-11 (Mitigation for Impacts to State Waters). Mitigation Measure WIL-7 (Bird and Bat Conservation Strategy) would require implementation of a plan to monitor death and injury of birds and bats from collisions with facility features and employ adaptive management as necessary. APM-52 requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the Project. Acquisition and protection, and/or restoration of degraded BLM administered lands in ACECs and/or California Desert National Conservation Lands, of off-site mitigation lands that would be required by WIL-4 and VEG-11 would also provide protected habitat for special-status bats.

Proposed Action: Indirect Effects

In addition to the direct effects discussed above, special status wildlife and its habitat may be subject to project-related indirect effects.

During construction, three temporary open storage tanks would be used and staged around the site. The tanks would have a diameter of approximately 160 feet and be approximately 12 feet high. They would hold more than 5 acre-feet each. A permanent, above-ground water storage tank would be used for O&M tasks and facilities. Mitigation Measure WIL-12 would require installation of a solid cover on open water storage tanks to prevent entrapment and drowning of birds and other wildlife attempting to access the water.

Invasive non-native plants, particularly Sahara mustard (*Brassica tournefortii*), degrade habitat by outcompeting native plants and stabilizing sand dunes. Invasive plants also can increase risk of accidental wildfires. Both effects can degrade wildlife habitat surrounding the project site. Mitigation Measure VEG-9 (Integrated Weed Management Plan) would require development of an Integrated Weed Management Plan to avoid or minimize the effects of invasive weeds. APM-4 also requires implementation of integrated weed management. Mitigation Measure VEG-6 (Worker Environmental Awareness Program) would require that workers receive training on fire prevention measures to be implemented on the project site. Additional fire prevention mitigation measures include APM-43 and WORKER SAFETY-1 (Project Construction Safety and Health Program) and WORKER SAFETY-2 (Project Operations and Maintenance Safety and Health Program) (see Section 4.11, Public Health and Safety). These mitigation measures would avoid, reduce, and compensate for indirect impacts on desert tortoise and other wildlife from invasive weeds and accidental wildfire.

Erosion and sedimentation of disturbed soils could degrade downstream wildlife habitat by damaging tortoise burrows or other habitat features. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) would require sediment control near desert washes and would avoid and reduce potential sediment impacts to downstream habitat.

Increased traffic during construction and O&M would increase the risk of vehicle strikes for many wildlife species. To minimize the risks of increased traffic fatality, Mitigation Measure VEG-8 would require confining vehicular traffic to and from the project site to existing routes of travel, prohibiting cross country vehicle and equipment use outside designated work areas, and imposing a speed limit of 25 miles per hour. APM-15 further reduces the speed limit as it requires a speed limit of 15 miles per hour in areas where desert tortoise may be impacted.

Chemical exposure from spraying or drift of herbicides and dust suppression chemicals could harm wildlife. Mitigation Measure VEG-9 (Integrated Weed Management Plan) would require measures to avoid herbicide drift. The Plan would also include a list of herbicides that will be used on the Project with manufacturer's guidance on appropriate use, where the herbicides will be used, and what techniques will be used to avoid chemical drift or residual toxicity to special-status species and their pollinators. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) would require measures to avoid soil stabilizer drift, and require that dust control agents be non-toxic to plants and wildlife.

The Proposed Action would have indirect effects on wildlife through fragmentation and degradation of adjacent habitat. These impacts would be offset through by Mitigation Measures WIL-4 (Desert Tortoise Compensatory Mitigation) and VEG-11 (Mitigation for Impacts to State Waters). Acquisition and protection of off-site mitigation lands and/or restoration of degraded BLM administered lands in ACECs and/or California Desert National Conservation Lands that

would be required by WIL-4 and VEG-11 would also provide protected habitat to offset this impact.

Special Status Wildlife

Desert Tortoise. In addition to the impacts described above, indirect impacts to desert tortoise from the Proposed Action could include increased predation from ravens,[1] coyotes, pet or feral dogs,[2] and other predators. Construction and O&M of could attract and "subsidize" tortoise predators due to the presence of water and food sources such as trash and road kill. Project structures, such as new transmission line towers and perimeter fencing would also provide new nesting and perching sites for ravens. Common ravens were rarely observed within the project site during surveys in 2009, although one pair was observed nesting in a desert ironwood tree in the north central portion of the project site (CEC, 2010). Development of new elevated perching sites as a result of project construction could increase raven numbers locally, including the probability that young ravens remain in the area after maturing, which, in turn, could result in increased predation on desert tortoise in the vicinity of the project site.

Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) would require measures to minimize road kill, food trash and other trash, and standing water, and prohibit pets on the project site. APM-7 also prohibits pets on project site. Mitigation Measure WIL-5 would require a Raven Management and Monitoring Plan to identify and prevent conditions that might attract or support ravens (e.g., eliminating food sources such as garbage or roadkill, minimizing creation of structures that could provide ravens perches, nests or roosts, and avoiding creation of and eliminating areas of ponded water), monitor the effectiveness of raven management and control measures, and implement additional adaptive management measures to ensure that the Project does not result in an increase in raven numbers. WIL-5 would also require the Applicant to contribute funding to the USFWS regional raven management program. The fees contributed by the project proponent would fund implementation of raven removal actions, education and outreach efforts, and surveying and monitoring activities in the Colorado Desert Recovery Unit, the area that would be adversely affected by any increases in raven subsidies attributable to the Proposed Action.

Mojave Fringe-toed Lizard. The Proposed Action would result in indirect impacts to off-site MFTL habitat through interruption of a regional sand transport corridor and creation of a sand shadow; see Section 4.17 (Vegetation Resources). In addition to the direct impact of habitat loss on the project site, the Project would affect off-site downwind MFTL habitat by interrupting the sand transport corridor (CEC, 2010), reducing sand supply to downwind habitat. Active sand dunes (i.e., dunes that have an active layer of mobile sand) exist in a state of dynamic equilibrium, continuously losing sand downwind due to erosion and transport and gaining new

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1 Common raven populations in some areas of the Mojave Desert have increased 1,500 percent from 1968 to 1988 in response to expanding human use of the desert (Boarman, 2002). Since ravens were scarce in this area prior to 1940, the current level of raven predation on juvenile desert tortoises is considered to be an unnatural occurrence (BLM, 1990; USFWS, 2008) and one of many anthropogenic contributors to desert tortoise population declines. Similar increases in raven populations have been observed in the Sonoran Desert. An analysis of Breeding Bird Survey (BBS) data for the Sonoran and Mojave Deserts showed that raven populations increased 450 to 1,000 percent from 1968 to 1992 (Boarman and Coe, 2002).

2 Feral dogs appear to be major predators of the tortoise. Dogs may range several miles into the desert and have been found digging up and killing desert tortoises (USFWS, 1994; Evans, 2001). Dogs brought to the project site with workers or visitors may harass, injure or kill desert tortoises, particularly if allowed off-leash to roam freely in occupied desert tortoise habitat.

supplies from upwind. If the upwind sand supply is cut off the dunes deflate, losing sand downwind and shrinking in size and depth. The finest sand (which is most easily transported) is lost first, with coarser sand and gravel being left behind to form an armor or lag. This lag does not support MFTL habitat.

The indirect impacts of the Proposed Action to the sand transport corridor would be offset through Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation), which requires off-site compensation for direct and indirect impacts to sand dune habitat for MFTL. It is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase or whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values. Therefore, with implementation of Mitigation Measure WIL-10 to the extent it is feasible, the Proposed Action's direct effects on sand transport may remain only partially mitigated.

Special Status and Migratory Birds

Collision and Electrocution. After completion of construction and throughout the life of the project, the solar facilities, gen-tie line, and other project components may present a collision or electrocution risk to birds. In the case of solar panels, the collision risk may be linked to the "lake effect" hypothesis described below. Bird collisions with structures typically occur when the structures are invisible (e.g., bare power lines or guy wires at night), deceptive (e.g., glazing and reflective glare), or confusing (e.g., light refraction or reflection from mist) (Jaroslow, 1979). Collision rates generally increase in low light conditions, during inclement weather, during strong winds, and during panic flushes when birds are startled by a disturbance, fleeing from danger, or diving after prey. Numerous golden eagle fatalities have been documented near transmission lines where collisions apparently occurred from striking unmarked wires while diving for prey (CEC, 2010).

Large raptors, such as the golden eagle, red-tailed hawk, and great-horned owl, can be electrocuted by transmission lines when a bird's wings simultaneously contact two conductors of different phases, or a conductor and a ground. This happens most frequently when a bird attempts to perch or take off from a structure with insufficient clearance between these elements. Distribution lines that are less than 69 kilovolts (kV) but greater than 1 kV generally have less spacing than transmission lines, thus posing an electrocution hazard for perching raptors. Configurations less than 1 kV or greater than 69 kV typically do not present an electrocution potential, based on conductor placement and orientation (APLIC, 1996).

The proposed gen-tie line would be 230 kV and would be fitted on top of monopole structures 115 to 135 feet in height with a span of 900 to 1,100 feet between poles (see Section 2, Proposed Action and Alternatives).

Mitigation Measure VEG-8 describes Best Management Practices and other impact avoidance and minimization measures, and would require that all transmission lines and electrical components be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC) Reducing Avian Collisions with Power Lines (APLIC, 2012), Suggested Practices for Avian Protection on Power Lines (APLIC, 2006), and Mitigating Bird Collisions with Power Lines (APLIC, 1994) to reduce the likelihood of large bird electrocutions and collisions. Mitigation Measure WIL-7 would require a Bird and Bat Conservation Strategy

to monitor the death and injury of birds; resulting data would be used to inform an adaptive management program intended to avoid and minimize project-related avian impacts. APM-52 requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the Project.

Lake Effect Hypothesis and Glare. It has been hypothesized that, to a bird's eyes, solar photovoltaic (PV) panels may mimic the reflective and light polarizing characteristics of water. Migrating water birds[3] may mistake fields of PV panels as water bodies, and consequently be attracted to them. This is referred to as the lake effect hypothesis. The lake effect has recently been postulated as a causal factor in injuries and mortalities of water birds at some solar facilities in the California Desert.

Once at the solar facility, birds may attempt to land on what they perceive as water, and instead collide with solar panels or other structures, resulting in injury or death. Additionally, some water birds require a running start across a water surface to take off. If these birds successfully land at the solar facility, they will be unable to take off again.

To date, little is known regarding the avian response to reflection or glare from PV solar technology; however, it is likely that glare will affect birds to some degree because the panels would reflect light and images, and might be mistaken for open sky or water. Light reflecting from photovoltaic panels could cause an increase in glare and Polarized Light Pollution (PLP). According to Horvath et al. (2009), PLP caused by anthropogenic structures can alter the ability of wildlife to seek out suitable habitat, detect or elude predators, or effectively navigate using natural polarized light patterns, ultimately affecting dispersal and reproduction. Available information is not sufficient to allow quantification of the potential hazard of glare.

Mitigation Measure WIL-7 would require the Applicant to prepare a Bird and Bat Conservation Strategy to monitor the death and injury of birds; resulting data would be used to inform an adaptive management program intended to avoid and minimize project-related avian impacts. APM-52 requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the Project. These measures are expected to mitigate this potential risk to the extent feasible, but an unknown residual risk to birds may remain.

Impacts Specific to Closure and Decommissioning

Potential impacts to wildlife resources from closure and decommissioning of the Proposed Action would involve residual disturbance of developed areas, as well as similar impacts from vehicle and equipment access and employees as noted for construction. When permanent closure is appropriate, a decommissioning plan would be developed and submitted to the BLM for review and approval. Procedures would be designed to ensure public health and safety, environmental protection, and compliance with all applicable laws, ordinances, regulations, and standards. Habitat restoration activities tied to closure and decommissioning are as yet unquantified, but would provide some benefit by providing some long-term ecosystem functions to the project disturbance area and surrounding plant communities and the wildlife these areas support. Miti-

[3] "Water birds" is an informal term referring to numerous birds, including waterfowl and many other species largely associated with wetland habitats or open water.

gation Measure VEG-12 would require a final Decommissioning and Reclamation Plan that would govern implementation of closure, decommissioning and reclamation activities consistent with BLM guidelines (43 CFR 3809.550 et seq.).

Alternative 1 – Reduced Footprint Alternative

Alternative 1, the Reduced Footprint Alternative, would be constructed within the same project boundary as the Proposed Action but would avoid placing any infrastructure across the central desert wash (see Figure 2-8). The Reduced Footprint Alternative would divide the Project into two separately fenced solar fields, with a gap of existing native vegetation between them, ranging from 1,750 feet to 2,300 feet wide. The acreage of permanent disturbance for the solar facility would be approximately 3,036 acres, or about 26% smaller than the Proposed Action.

As summarized in Tables 4.17-1 and 4.17-2, direct and indirect impacts to wildlife habitat, and indirect impacts to the sand transport system would be reduced from the Proposed Action. Overall, impacts to most wildlife species would be qualitatively similar but quantitatively reduced to the Proposed Action. Most importantly, impacts to desert dry wash woodland and sand transport would be substantially reduced. This alternative would allow the Project to substantially achieve the goal of the DRECP LUPA Conservation and Management Action (CMA), LUPA-BIO-RIPWET-1 (see Table 2-6), to avoid riparian and wetland vegetation types. These reduced impacts to important habitat areas would lead to reduced direct impacts to birds and mammals using the dry wash woodland habitat, and MFTL, which is found in the windblown sand habitat.

Alternative 1 would result in substantial reduction of impacts to wildlife movement by providing a wide movement corridor along the main wash that bisects the project site.

Implementation of Mitigation Measures VEG-1 through VEG-13 and WIL-1 through WIL-12, as well as other measures cited in the analysis for the Proposed Action, would avoid, minimize, or offset impacts of Alternative 1 to wildlife resources, as described under the direct and indirect impacts analysis for the Proposed Action.

Alternative 2 – Avoidance Alternative

Alternative 2, the Avoidance Alternative, would be constructed within the same project boundary as the Proposed Action but would conform to avoidance and setback requirements of the DRECP LUPA Conservation and Management Actions (see Figure 2-9). Similar to Alternative 1, the Avoidance Alternative would divide the Project into two separately fenced solar fields, with a gap of existing native vegetation between them. In addition, the Avoidance Alternative would provide wider avoidance and setback areas. The acreage of permanent disturbance would be approximately 1,621 acres (about 40% of the size of the Proposed Action).

As summarized in Tables 4.17-1 and 4.17-2, direct and indirect impacts to wildlife habitat, and indirect impacts to the sand transport system would be substantially reduced from the Proposed Action. Overall, impacts to most wildlife species would be qualitatively similar but quantitatively reduced compared to the Proposed Action. Most importantly, impacts to desert dry wash woodland and sand transport would be avoided. These reduced impacts to important habitat areas would minimize the direct and indirect impacts to birds and mammals using the dry wash woodland habitat, and MFTL, which is found in the windblown sand habitat. By avoiding the

sand transport corridor and Mojave-fringe toed lizard habitat, Alternative 2 would comply with CMA LUPA-BIO-DUNE-2 and LUPA-DIO-DUNE-4 that require avoidance of dune formation and suitable habitat for Mojave-fringe toed lizard habitat.

Alternative 2 would result in substantial reduction of impacts to wildlife movement by providing a wide movement corridor along the main wash that bisects the project site.

The alternative would also require adherence to CMAs:

- LUPA-BIO-COMP-1 that requires compensation to desert riparian woodland vegetation types at a 5:1 basis (note the other compensation ratios are the same as those presented in the mitigation measure), and
- LUPA-BIO-COMP-2 that requires compensation for the mortality impacts to bird and bat Focus and BLM Special Status Species from activities will be determined based on monitoring of bird and bat mortality and a fee re-assessed every 5 years to fund compensatory mitigation.

Implementing the CMAs would not affect compensation requirements for the Project because no desert riparian woodland vegetation types (as defined in the DRECP LUPA, which amends the CDCA Plan) would be affected by the Proposed Action or any of the alternatives. The compensation requirements for morality to selected bird and bat species could result in increased compensation requirements for the Project, dependent on monitoring data to be obtained under the Bird and Bat Conservation Strategy (Mitigation Measure WIL-7).

Implementation of Mitigation Measures VEG-1 through VEG-13 and WIL-1 through WIL-12, as well as other measures cited in the analysis for the Proposed Action, would avoid, minimize, or offset impacts of Alternative 1 to wildlife resources, as described under the direct and indirect impacts analysis for the Proposed Action.

No Action Alternative

Under the No Action Alternative, the ROW application CACA-48810 would be denied and the ROW grant would not be authorized. Therefore, none of the impacts of the Proposed Action would occur. Because this application site is within a Development Focus Area (DFA) of the DRECP LUPA, denial of this project would not foreclose the site to development in the future. The type of project that could be developed at this site is outside the scope of this Supplemental EIS/EIR; however, the DRECP Final EIS provides an impact analysis for the types of development likely to occur in DFAs. Any future project at this location would be subject to its own NEPA process under the DRECP LUPA.

4.21.3 Cumulative Effects

Geographic Scope

The following assessment of cumulative impacts is based primarily on a regional, qualitative evaluation of past, present and future foreseeable projects (including the Proposed Action) within the geographic scope of the DRECP Cadiz Valley and Chocolate Mountains Ecoregion Subarea (CVCM). This geographic region encompasses regional wildlife population and habitat resources, and the physical and ecological processes that sustain these resources such as sand

source, movement, and deposition areas; dry lakes and associated valley and mountain watersheds; and a series of isolated mountain ranges and the valley floors providing biological connectivity among them to sustain present-day wildlife populations as well as likely future habitat as climate change proceeds. The CVCM encompasses 707,000 acres of BLM-administered lands within the DRECP area (excluding military lands, tribal lands, and BLM Open OHV Areas). Of this, 148,000 acres are in Development Focus Areas (DFA); see Section 3.17.2 (Vegetation Resources: Existing Conditions).

For each cumulative effect the following questions were considered in making conclusions about the severity or significance of an effect:

- The health, status or condition of the resource as a result of past, present and reasonably foreseeable impacts;
- The contribution of the Proposed Action to the overall cumulative impact to the resource;
- The Project's mitigated effect, when added to the effects of these planned future projects, and;
- Impact avoidance and minimization: any project design changes that were made, or additional opportunities that could be taken, to avoid and minimize potential impacts in light of cumulative impact concerns.

A number of past, present and future foreseeable projects (cumulative projects) were identified for the assessment of potential cumulative impacts, including the Proposed Action; see Section 4.0 (Environmental Consequences). The cumulative projects for each resource are listed in Table 4.21.2.

Table 4.21-2. Cumulative Scenario

Resource	Cumulative Geographic Scope	Elements to Consider	Cumulative Projects[1]
General wildlife impacts	CVCM	Acreage of direct and indirect impacts including connectivity	▪ West-wide Section 368 Energy Corridors ▪ Blythe PV Project ▪ McCoy Solar Project ▪ Genesis Solar Energy Project ▪ Blythe Solar Power Project ▪ Desert Sunlight Solar Project ▪ SCE Red Bluff Substation ▪ Devers–Palo Verde 1 Transmission Line ▪ Devers–Palo Verde 2 Transmission Line ▪ Blythe Energy Project Transmission Line ▪ SCE Colorado River Substation ▪ Desert Renewable Energy Conservation Plan ▪ Commercial and Residential projects ▪ Desert Southwest Transmission Line ▪ Sonoran Energy Project (licensed as Blythe Energy Project Phase II) ▪ Eagle Mountain Pumped Storage Project ▪ Rice Solar Energy Project ▪ Desert Quartzite Solar ▪ Crimson Solar ▪ Blythe Mesa Solar Project ▪ Desert Harvest Solar Farm ▪ DC 50 Solar Project ▪ SunEdison Jupiter Project (CACA 56477) ▪ First Solar Development, LLC (CACA 56782) ▪ SunPower Project ▪ Plot Plan No. 23577, Revised Permit No 2
Desert Tortoise	CVCM	Acreage of direct and indirect impacts including connectivity	Same as for General wildlife impacts
Mojave Fringe-toed Lizard	CVCM	Acreage of direct and indirect impacts including downwind sand shadow	• Blythe PV Project (21 MW) • Genesis Solar Energy Project • Desert Sunlight Solar Project • SCE Colorado River Substation • Desert Quartzite Solar • Crimson Solar • SunPower Project
Western Burrowing Owl	CVCM	Acreage of direct and indirect impacts	Same as for General wildlife impacts
Golden Eagle	CVCM	Acreage of impacts to foraging habitat	Same as for General wildlife impacts
Special Status and Migratory Birds	CVCM	Species directly or indirectly affected by the Project	Same as for General wildlife impacts
Other Special Status Species	CVCM	Species directly or indirectly affected by the Project	Same as for General wildlife impacts

Table 4.21-2. Cumulative Scenario

Resource	Cumulative Geographic Scope	Elements to Consider	Cumulative Projects[1]
Wildlife Connectivity	CVCM	Direct and indirect impacts	▪ West-wide Section 368 Energy Corridors ▪ Desert Sunlight Solar Project ▪ SCE Red Bluff Substation ▪ Devers–Palo Verde 1 Transmission Line ▪ Devers–Palo Verde 2 Transmission Line ▪ Blythe Energy Project Transmission Line ▪ Desert Southwest Transmission Line ▪ Eagle Mountain Pumped Storage Project ▪ Desert Harvest Solar Farm ▪ DC 50 Solar Project ▪ SunEdison Jupiter Project (CACA 56477) ▪ First Solar Development, LLC (CACA 56782) ▪ SunPower Project ▪ Plot Plan No. 23577, Revised Permit No 2

1 - See Table 4.1-1.

Cumulative Impact Analysis

A number of potentially substantial cumulative impacts to biological resources were identified for the Proposed Action and Alternatives 1 and 2, and mitigation measures were developed to minimize the associated contributions to less than cumulatively considerable levels.

General wildlife impacts. Construction of the Proposed Action or Alternatives 1 and 2 would eliminate wildlife habitat on the site and cause direct or indirect effects to habitat off-site. These effects are described, and mitigation is identified for them in Section 4.17 (see sections addressing Vegetation Communities, Sensitive Natural Communities, Groundwater-dependent Natural Communities, and Jurisdictional Waters). Existing projects in the CVCM have removed habitat, and foreseeable projects either subject or not to the DRECP LUPA within CVCM could similarly affect wildlife habitat. In particular, EDF's 150 MW Desert Harvest Project (located about 8 miles northwest of the PSP) may be under construction at the same time as the Palen Solar Project, due to the potential for them to be linked through a single power purchase agreement. The wildlife species at that site are similar to those at the PSP, though Desert Harvest presented fewer concerns about migration blockages and sand transport.

The Proposed Action, in combination with past, present, and foreseeable projects would result in a cumulative effect to wildlife habitat in the CVCM. Those future projects would incorporate applicable mitigation measures or DRECP LUPA CMAs identified in Cumulative Effects analysis in Section 4.17, including: LUPA-BIO-3 (Resource Setback Standards), LUPA-BIO-7 (Restoration of temporary disturbed areas), LUPA-BIO-10 (Standard Practices for Weed Management), LUPA-BIO-15 (grading and compaction techniques), DFA-VPL-BIO-IFS-1 (maximizes siting in previously disturbed areas), and LUPA-BIO-COMP-1 (habitat compensation). The Project's APMs and Mitigation Measures VEG-1 through VEG-9, WIL-4, and WIL-10 would minimize and compensate for the Proposed Action's impacts to wildlife habitat. With incorporation of these measures, the Project's contribution to cumulative wildlife habitat impacts would not be considerable.

Construction activities would cause injury or mortality of animals, and disturbance from noise and human activity. Cumulative injury, mortality and disturbance effects of the past, present, and foreseeable future projects in the CVCM area could be substantial. The Project's impacts would be minimized through multiple provisions specified in Mitigation Measures VEG-1 through VEG-5 (biological monitoring), VEG-6 (worker environmental training), and VEG-8 (Impact Avoidance and Minimization Measures). Future projects would incorporate applicable mitigation measures or applicable DRECP CMAs. Future projects subject to the DRECP LUPA within CVCM would incorporate LUPA-BIO-2 (biological monitoring), LUPA-BIO-5 (worker education), LUPA-BIO-13 (general siting and design), LUPA-BIO-14 (general standard practices), DFA-VPL-BIO-IFS-1 (siting), and DFA-VPL-BIO-COMP-1 (habitat compensation).

Construction of the Proposed Action or Alternatives 1 and 2 would result in a temporary, although relatively long-term (30-month) increase in ambient noise in the project site and adjacent areas. APM-6 and Mitigation Measure VEG-8 would require avoidance of loud construction activities (i.e., pile driving) that would result in noise levels over 65 dBA in nesting habitat (such as dry desert wash woodland) between February 15 and April 15, the height of the bird breeding season. Similarly, construction of future projects within CVCM would cause increased ambient noise levels in and around each project site. Dependent on the location and construction scheduling of these future projects, there may be a cumulative effect to wildlife habitat suitability, resulting in broader impacts than the Proposed Action alone. Future projects not subject to DRECP LUPA would incorporate applicable mitigation measures. Future projects subject to the DRECP LUPA would incorporate applicable DRECP LUPA CMAs, including LUPA-BIO-12 (noise).

Construction and operation of the Proposed Action or Alternatives 1 and 2 would require onsite nighttime lighting for safety and security, which could affect wildlife activities in the vicinity. Lighting would be limited and focused downward, shielded, and directed toward the interior of the site to minimize light exposure to areas outside the construction area. No aviation lighting would be required for the Proposed Action or Alternatives 1 and 2. Other past, present, and foreseeable projects also contribute to wildlife disturbance from lighting. In combination, the Proposed Action and these other projects may cumulatively cause substantial wildlife disturbance, possibly affecting feeding or nesting behavior widely within the CVCM. The Project's disturbance to wildlife from lights would be minimized by Mitigation Measure VEG-8 (which includes specifications and by VIS-3 (Temporary and Permanent Exterior Lighting). Future projects not subject to DRECP LUPA would incorporate applicable mitigation measures to minimize lighting impacts. Future projects subject to the DRECP within CVCM would incorporate applicable DRECP LUPA CMAs, including LUPA-BIO-13 (general siting and design, including lighting standards) and LUPA-BIO-16 (bird and bat specifications, including lighting standards).

With implementation of the Project's mitigation measures identified above, additional project-specific measure for future projects not subject to the DRECP, as well as DRECP requirements to minimize general impacts to wildlife, the Proposed Action's contribution to cumulative general impacts including injury, mortality, and disturbance to wildlife would not be considerable.

Wildlife Movement and Connectivity. The Proposed Action or Alternatives 1 and 2 could impede wildlife movement for wide-ranging wildlife such as burro deer, kit fox, coyotes, and badgers, and on a population level could impede gene flow for desert tortoises or other species.

Mitigation Measure WIL-1 (Desert Tortoise Protection) would require construction of desert tortoise exclusion fencing on both sides of I-10 to direct desert tortoise and other wildlife to safe passage under the freeway. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) would require designing all permanent project fencing to prevent potential entanglement of deer and other wildlife. Past, present, and foreseeable future projects in the vicinity of Desert Center the Interstate-10 corridor are listed in Table 4.21-2. In combination, these projects would cumulatively affect the ability of wildlife populations to move among large habitat areas located north and south of the I-10 because each project would be fenced to eliminate wildlife passage. More broadly, all projects listed in Table 4.21-2 under General Wildlife Impacts could contribute to cumulative wildlife movement and wildlife population viability, throughout the CVCM.

According to CMA LUPA-BIO-13, "Projects will be sited to maintain the function of connectively and linkages." The DRECP LUPA identifies two multiple-species linkage areas in the vicinity of the project site (see Figure 3.21-1), including a 3-mile-wide linkage across Interstate 10 to connect the Chuckwalla and Palen mountains, and a 1.5-mile-wide linkage across Interstate 10 to connect the Chuckwalla Mountains to the Chuckwalla Valley east of Desert Center. In addition, the DRECP identifies linkages elsewhere in the CVCM to sustain regional wildlife habitat connectivity. In addition, future projects subject to the DRECP LUPA within CVCM would incorporate applicable DRECP LUPA CMAs, including LUPA-BIO-IFS-3 (requires culvert accessibility for desert tortoise).

With implementation of the project-specific mitigation measures, the contribution to cumulative impacts to wildlife movement and connectivity from the Proposed Action or Alternatives 1 and 2 would not be considerable.

Desert tortoise. Most of the past, present, and foreseeable future projects in the CVCM area would impact desert tortoise habitat and many of them could directly affect desert tortoises. Cumulative habitat loss and potential take of desert tortoise resulting from the Proposed Action or Alternatives 1 and 2 would be relatively minor, due to relatively low-quality desert tortoise habitat and absence of recent desert tortoise sign on the site. However, the Proposed Action and Alternatives 1 and 2 would interrupt desert tortoise habitat connectivity across the I-10 Freeway, possibly affecting long-term population and genetic viability of populations in the Chuckwalla and Chemehuevi ACECs and critical habitat areas (see Wildlife Movement and Connectivity, above). The Proposed Action, in combination with past, present, and foreseeable future projects, could have a cumulatively substantial impact on desert tortoise populations. Mitigation Measures WIL-1 (Desert Tortoise Protection), WIL-2 (Desert Tortoise Relocation/Translocation Plan), and WIL-3 (Desert Tortoise Compliance Verification) and APMs 10 through 15 would avoid and minimize potential take of desert tortoise during project construction and operation. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) would require measures to minimize road kill, food trash, and standing water, and prohibit pets on the project site. Mitigation Measure WIL-5 would require implementation of a Raven Management and Monitoring Plan to identify and prevent conditions that might attract or support ravens. Mitigation Measure VEG-9 (Weed Management Plan) and APM-4 would require the project proponent to implement a detailed weed management plan. Other mitigation measures would also be implemented to avoid and minimize impacts, including biological monitoring (VEG-1 through VEG-5), WEAP training (VEG-6), and a Biological Resources Mitigation

Implementation and Monitoring Plan (VEG-7). APMs would also require biological monitoring (APM-1), WEAP training (APM-2), and Best Management Practices and general avoidance and minimization measures (APM-6, APM-7). Future projects subject to the DRECP LUPA within CVCM would incorporate applicable mitigation measures of applicable DRECP LUPA CMAs, including LUPA-BIO-4 (seasonal restrictions), LUPA-BIO-6 (subsidized predator standards), LUPA-BIO-IFS-4 (desert tortoise exclusion fencing), LUPA-BIO-IFS-3 (requires culvert accessibility for desert tortoise), and LUPA-BIO-IFS-5 (tortoise monitoring during clearing and grading).

To offset the loss of desert tortoise habitat, Mitigation Measure WIL-4 (Desert Tortoise Compensatory Mitigation) would require habitat compensation. This measure would also require land acquisitions of parcels and/or restoration of degraded BLM lands in ACECs and/or California Desert National Conservation Lands that contribute to desert tortoise habitat connectivity and build linkages between desert tortoise populations and designated critical habitat. Future projects subject to the DRECP LUPA within CVCM would incorporate applicable DRECP LUPA CMAs, including general wildlife measures identified above and LUPA-BIO-4 (seasonal restrictions), LUPA-BIO-6 (subsidized predator standards), LUPA-BIO-IFS-4 (desert tortoise exclusion fencing), LUPA-BIO-IFS-3 (requires culvert accessibility for desert tortoise), LUPA-BIO-IFS-5 (tortoise monitoring during clearing and grading), LUPA-BIO-IFS-8 (vehicle inspections), BIO-IFS-1 (desert tortoise field surveys), and BIO-IFS-3 (desert tortoise translocation). Other projects not subject to the DRECP LUPA incorporate applicable mitigation measures, including desert tortoise avoidance and habitat compensation requirements.

With implementation of the project-specific mitigation measures, the contribution to cumulative impacts to desert tortoise from the Proposed Action or Alternatives 1 and 2 would not be considerable.

Mojave fringe-toed lizard: Within Chuckwalla Valley, the Proposed Action would directly or indirectly affect MFTL habitat, including expected interruption of sand transport. In combination with past, present, and foreseeable future projects, the Project could have a cumulatively substantial impact on Mojave fringe-toed lizard (MFTL) populations and habitat. The direct and indirect impacts to MFTL habitat resulting from the Project would be minimized, avoided, or offset by Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation). The Project's contribution to the spread of Sahara mustard, which degrades the quality of MFTL habitat also contributes to cumulative impacts, and would be mitigated by Mitigation Measure VEG-9 (Integrated Weed Management Plan) and APM-4. The direct, indirect, and cumulative effects of the Project on the sand transport corridor are discussed in Section 4.17 (Vegetation Resources). Future projects subject to the DRECP LUPA would incorporate applicable DRECP Conservation Management Actions (CMAs) including: LUPA-BIO-3 (resource setbacks), LUPA-BIO-6 (subsidized predator standards), LUPA-BIO-DUNE-1 (Aeolian Processes), LUPA-BIO-DUNE-2 (Sand Transport Corridor), LUPA-BIO-DUNE-4: (Mojave Fringe-Toed Lizard), LUPA-TRANS-BIO-4 (regarding transmission siting, including avoidance of sand transport corridors), DFA-VPL-BIO-DUNE-1 (minimizes siting in dune habitat), DFA-VPL-BIO-DUNE-2 (maximizes sand movement through project sites). Other future projects not subject to DRECP would incorporate MFTL mitigation as applicable.

It is uncertain whether sufficient private lands meeting the habitat criteria under Mitigation Measure WIL-10 may be available or whether off-site enhancement and restoration can feasibly and effectively restore MFTL habitat values. Therefore, with implementation of Mitigation Measure WIL-10 to the extent it is feasible, the contribution of the Proposed Action may remain considerable.

Alternative 2 would have substantially reduced impacts on MFTL habitat, and would not have considerable contributions to cumulative MFTL impacts in the CVCM.

Western burrowing owl: The Proposed Action or Alternatives 1 and 2 would eliminate occupied burrowing owl habitat, contribute to the cumulative loss of burrowing owl habitat, and (without avoidance measures) could cause take of burrowing owls. In combination with past, present, and foreseeable future projects, the Project could have a cumulatively substantial impact on burrowing owl populations and habitat. The Project's contribution to these indirect effects and loss of habitat would be mitigated through Mitigation Measures WIL-9 (Burrowing Owl Impact Avoidance, Minimization and Compensation Measures) and APM-17, which would require avoidance and minimization measures specific to burrowing owl; VEG-8 (Impact Avoidance and Minimization Measures), which would include measures for addressing impacts from noise, lighting, and traffic (road kills) through a variety of measures. Additional measures to offset habitat loss and mitigate or avoid habitat degradation from invasive weeds are identified in Section 4.17. Future projects subject to the DRECP LUPA within CVCM would incorporate applicable DRECP CMAs, including general wildlife measures identified above and LUPA-BIO-4 (seasonal restrictions), LUPA-BIO-3 (setback standards), LUPA-BIO-16 (activity-specific bird and bat CMAs), LUPA-BIO-17 (bird and bat conservation strategy), LUPA-BIO-IFS-12 (burrowing owl monitoring and avoidance), LUPA-BIO-IFS-13 (burrowing owl passive exclusion), LUPA-BIO-COMP-2 (bird and bat habitat compensation), DFA-BIO-IFS-1 (surveys), and DFA-BIO-IFS-1 (setbacks). Other future projects not subject to the DRECP LUPA would implement any applicable mitigation measures for burrowing owl impacts.

With implementation of the project-specific mitigation measures, the contribution to cumulative impacts to burrowing owl from the Proposed Action or Alternatives 1 and 2 would not be considerable.

Golden eagle: The Proposed Action or Alternatives 1 and 2 would contribute to the cumulative loss of golden eagle foraging habitat in the Chuckwalla Valley. In combination with past, present, and foreseeable future projects, the Project could have a cumulatively substantial impact on golden eagle foraging habitat. Loss of foraging habitat would be offset through Mitigation Measures WIL-4 (Desert Tortoise Compensatory Mitigation) and other compensation measures which would require acquisition of offsite habitat and/or restoration of degraded BLM lands in ACECs and/or California Desert National Conservation Lands, VEG-9 (Weed Management Plan) and APM-4, which would address the Proposed Action's contribution to the spread of invasive non-native plants such as Sahara mustard; and VEG-8 (Avoidance and Minimization Measures), which would require that conformance with Avian Power Line Interaction Committee (APLIC) guidelines to reduce collision and electrocution hazards. Mitigation Measure WIL-7 (Bird and Bat Conservation Strategy) would further minimize the Proposed Action's contribution to cumulatively considerable impacts from collisions and electrocutions through the development of monitoring and an adaptive management program to avoid and minimize future

project-related avian impacts. APM-52 requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the Project. Mitigation Measure WIL-11 (Golden Eagle Inventory and Monitoring) and APMs 18 through 20 would reduce, avoid, and minimize project-related construction impacts to golden eagles. Future projects subject to the DRECP LUPA within CVCM would incorporate applicable DRECP LUPA CMAs, including general wildlife measures identified above and LUPA-BIO-4 (seasonal restrictions), LUPA-BIO-3 (setback standards), LUPA-BIO-16 (activity-specific bird and bat CMAs), LUPA-BIO-17 (bird and bat conservation strategy), LUPA-BIO-IFS-26 (golden eagle risk assessment), LUPA-BIO-IFS-28 (golden eagle surveys), LUPA-BIO-COMP-2 (bird and bat habitat compensation), LUPA-BIO-COMP-3 and LUPA-BIO-COMP-4 (golden eagle habitat compensation), DFA-BIO-IFS-1 (surveys), and DFA-BIO-IFS-1 (setbacks).

With implementation of the project-specific mitigation measures the contribution to cumulative impacts from the Proposed Action or Alternatives 1 through 4 to golden eagle foraging habitat would not be substantial.

Special status and migratory birds: The Proposed Action and Alternatives 1 and 2 would contribute to cumulative direct and indirect impacts to migratory birds including: habitat loss and fragmentation; construction impacts to nesting birds; an increase in noise and lighting, avian predators, and collisions and electrocutions. In combination with past, present, and foreseeable future projects, the Project could have a cumulatively substantial impact on special status and migratory bird populations. These impacts would be minimized or offset through measures to offset habitat loss and mitigate or avoid habitat degradation from invasive weeds identified in Section 4.17. Additional measures identified in this section include WIL-6 (Pre-construction Nest Surveys and Avoidance Measures), which would require avoidance of active nests during construction; WIL-7 (Bird and Bat Conservation Strategy), which would require monitoring of bird kills and implementation of adaptive management; APM-52, which would require implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the project; and VEG-8 (Impact Avoidance and Minimization Measures), which includes measures for minimizing the effects of noise, lighting, traffic, and other impacts. Mitigation Measure VEG-11 (Mitigation for Impacts to State Waters) would require mitigation for impacts to state waters, the implementation of which also would address impacts to migratory and special-status bird species and their habitats by permanently protecting riparian habitat. Mitigation Measure WIL-5 (Raven Management Plan and Fee) would also mitigate for indirect effects of increased raven predation on special status and migratory bird nests. Future projects subject to the DRECP LUPA within CVCM would incorporate applicable DRECP LUPA CMAs, including general wildlife measures identified above and LUPA-BIO-4 (seasonal restrictions), LUPA-BIO-3 (setback standards), LUPA-BIO-16 (activity-specific bird and bat CMAs), LUPA-BIO-17 (bird and bat conservation strategy), LUPA-BIO-COMP-2 (bird and bat habitat compensation). Projects not subject to the DRECP would implement any applicable mitigation measures.

With implementation of the project-specific mitigation measures, the contribution to cumulative impacts to special-status and migratory bird populations from the Proposed Action or Alternatives 1 and 2 would not be considerable.

Yuma mountain lion, desert bighorn sheep, burro deer, American badger and desert kit fox: The Proposed Action and Alternatives 1 and 2 would contribute to cumulative loss and degradation of habitat, and disruptions of wildlife movement routes. Please refer to the discussions of cumulative impacts to wildlife habitat loss and wildlife movement and connectivity (above).

With implementation of the project-specific mitigation measures, the contribution to cumulative impacts to these mammals from the Proposed Action or Alternatives 1 and 2 would not be considerable.

Special status bats: The Proposed Action and Alternatives 1 and 2 would eliminate foraging habitat for several special-status bat species. In combination with past, present, and foreseeable future projects in the CVCM, the Project could have a cumulatively substantial impact on special status bat populations. These Project's impacts would be minimized or offset through measures to offset habitat loss and mitigate or avoid habitat degradation from invasive weeds identified in Section 4.17. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) contains specific measures to minimize road kill and noise and lighting impacts. Mitigation Measure WIL-7 (Bird and Bat Conservation Strategy), requires monitoring of bird and bat kills and implementation of adaptive management measures to the monitoring program as necessary. APM-52 requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the Project. Future projects subject to the DRECP LUPA within CVCM would incorporate applicable DRECP LUPA CMAs, including general wildlife measures identified above and LUPA-BIO-16 (activity-specific bird and bat CMAs), LUPA-BIO-17 (bird and bat conservation strategy), LUPA-BIO-COMP-2 (bird and bat habitat compensation). With implementation of the project-specific mitigation measures, the contribution to cumulative impacts to special status bat populations from the Proposed Action or Alternatives 1 and 2 would not be considerable.

4.21.4 Mitigation Measures

Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs. There are 20 APMs relevant to wildlife resources (Section 2.2.7, Chapter 2). Table 4.17-4 explains how APMs 1, 2, 4, 5, 43, and 52 reduce project effects, and how they relate to mitigation measures recommended below. The remaining wildlife-related APMs are discussed in Table 4.21-3.

Table 4.21-3. Applicant Proposed Measures for Vegetation Resources

APM #	Text	Explanation
APM-6	Requires measures to avoid and minimize noise impacts on special status species.	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures), requires measures to avoid and minimize noise impacts on all nesting birds. The analysis has considered implementation of APM-6 prior to recognizing the need for additional mitigation identified in VEG-8.

Table 4.21-3. Applicant Proposed Measures for Vegetation Resources

APM #	Text	Explanation
APM-7	Lists general standard practices for the protection of biological resources, including measures to avoid harassment or entrapment of wildlife.	Augmented by Mitigation Measures VEG-8 (Impact Avoidance and Minimization Measures) and WIL-12 (Water Tank Covers) which require additional measures to avoid entrapment of wildlife in materials, excavations, and water tanks. The analysis has considered implementation of APM-7 prior to recognizing the need for additional mitigation identified in VEG-8 and VEG-12.
APM-9	Requires clearance surveys for MFTL in suitable habitat.	Augmented by Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation) which requires compensatory mitigation for habitat loss and direct impacts to MFTL. The analysis has considered implementation of APM-9 prior to recognizing the need for additional mitigation identified in WIL-10.
APM-10	Requires installation and maintenance of desert tortoise exclusion fencing around the project site.	Augmented by Mitigation Measure WIL-1 (Desert Tortoise Protection) which specifies additional details regarding the desert tortoise exclusion fencing around the project site (excepting sandfield areas) and further requires exclusion fencing along both sides of the 1-10 freeway south of the project site or elsewhere to provide equivalent benefit. The analysis has considered implementation of APM-10 prior to recognizing the need for additional mitigation identified in WIL-1.
APM-11	Requires monitoring to ensure that all desert tortoises have been removed from fenced areas and inspection of materials to prevent entrapment of desert tortoise.	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) which requires inspection of materials and excavations to prevent entrapment of desert tortoise and other wildlife. Mitigation Measures WIL-1 (Desert Tortoise Protection) and WIL-2 (Desert Tortoise Relocation/Translocation Plan) also augment APM-11 by specifying further details regarding desert tortoise monitoring, clearance surveys, and relocation. The analysis has considered implementation of APM-11 prior to recognizing the need for additional mitigation identified in VEG-8, WIL-1 and WIL-2.
APM-12	Requires biological monitoring during geotechnical boring work to avoid impacts to desert tortoises and their burrows.	Augmented by Mitigation Measures WIL-1 (Desert Tortoise Protection) and WIL-2 (Desert Tortoise Relocation/Translocation Plan) which specify further details desert tortoise monitoring, clearance surveys, and relocation. The analysis has considered implementation of APM-12 prior to recognizing the need for additional mitigation identified in WIL-1 and WIL-2.
APM-13	Requires biological monitoring during geotechnical testing to avoid impacts to desert tortoises and their burrows.	Augmented by Mitigation Measures WIL-1 (Desert Tortoise Protection) and WIL-2 (Desert Tortoise Relocation/Translocation Plan) which specify further details desert tortoise monitoring, clearance surveys, and relocation. The analysis has considered implementation of APM-12 prior to recognizing the need for additional mitigation identified in WIL-1 and WIL-2.
APM-14	Requires inspecting underneath vehicles for desert tortoise before moving and allowing any tortoise to move on their own or be relocated by a designated biologist.	Superseded by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) specifies additional details for checking under vehicles and allowing any tortoise to move on its own or be relocated by a designated biologist.
APM-15	Requires a speed limit of 15 miles per hour in areas where desert tortoise may be impacted.	Augmented by Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) which identifies numerous resource protection requirements. The analysis has considered implementation of APM-15 prior to recognizing the need for additional mitigation identified in VEG-8.

Table 4.21-3. Applicant Proposed Measures for Vegetation Resources

APM #	Text	Explanation
APM-16	Requires biological monitoring to avoid impacts to Bendire's thrasher.	Superseded by Mitigation Measure WIL-6 (Pre-construction Nest Surveys and Avoidance Measures) which requires nest surveys, monitoring, and avoidance measures for all nesting birds.
APM-17	Allows for passive burrow exclusion after confirmation that the burrow is not supporting nesting or fledgling activities.	Augmented by Mitigation Measure WIL-9 (Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures) which specifies further details on passive relocation, as well as other measures to avoid and minimize impacts on burrowing owls. The analysis has considered implementation of APM-17 prior to recognizing the need for additional mitigation identified in WIL-9.
APM-18	Requires that activities that may impact nesting golden eagles will not be sited within one mile of an active nest.[4]	Superseded by Mitigation Measure WIL-11 (Golden Eagle Inventory and Monitoring) which specifies golden eagle inventory and monitoring. The analysis has considered implementation of APM-18 prior to recognizing the need for additional mitigation identified in WIL-11.
APM-19	Requires golden eagle compensation.	Superseded by Mitigation Measure WIL-4 which requires compensation for desert tortoise habitat; this compensation also will compensate for golden eagle habitat impacts.
APM-20	Requires contribution to a golden eagle monitoring program if the project is determined to be likely to impact golden eagles.	Augmented by Mitigation Measure WIL-11 (Golden Eagle Inventory and Monitoring) which specifies golden eagle inventory and monitoring to support any determination of impacts. The analysis has considered implementation of APM-20 prior to recognizing the need for additional mitigation identified in WIL-11.
APM-52	Requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the project.	Augmented by Mitigation Measure WIL-7 (Bird and Bat Conservation Strategy) which requires monitoring of death and injury of birds and bats from collisions with project features to inform an adaptive management program that would avoid and minimize project-related avian and bat impacts. The analysis has considered implementation of APM-52 prior to recognizing the need for additional mitigation identified in WIL-7.

Mitigation measures, including avoidance, minimization, and compensation, are recommended to offset direct, indirect, and cumulative impacts to desert tortoise and other special status wildlife species, and to assure compliance with state and federal laws such as the federal and State endangered species acts. Section 4.17 (Vegetation Resources) also includes general measures that would benefit all biological resources, including wildlife and associated habitat. Please see Section 4.17 for full text of these measures. The full text of wildlife mitigation measures is presented below.

Compensation lands that are acquired to offset impacts to biological resources may be "nested" or "layered." For example, compensation for impacts to burrowing owls could be entirely or partially fulfilled by the acquisition of desert tortoise habitat compensation lands, provided those lands also contain suitable or occupied burrowing owl habitat and the acreage of compensation lands for burrowing owls is met. Thus, compensation for burrowing owls or other resources (desert tortoise, rare plants, golden eagle, etc.) may be fully nested within other compensation requirements. Where impacted lands meet criteria for two (2) or more compensation ratios, the highest ratio will apply.

[4] As noted in Table 3.21-1, there is no suitable golden eagle nesting habitat within 3 miles of the project site.

Because this document is supplemental to the EIS for PSPP, the mitigation measures identified for PSPP have been largely retained, with minor revisions to account for differences between the Proposed Action and PSPP and reflect the roles of the lead agencies. Mitigation measures identified for the PSPP that are no longer applicable (e.g., in-lieu CESA mitigation for projects funded through the American Recovery and Reinvestment Act of 2009) are not included here. The numbering for mitigation measures has been revised from that used for PSPP, to reflect the organization of vegetation and wildlife impacts analysis presented in this document. Mitigation Measure VEG-13 (Revegetation of Temporarily Disturbed Areas) has been substantially revised to replace the PSPP Mitigation Measure BIO-27. See Table 4.17-5 (Section 4.17 Vegetation Resources) for a crosswalk that explains the relationship between mitigation measure numbers for PSPP and the Palen Solar Project.

WIL-1 **Desert Tortoise Protection.** The project owner shall undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence specification and installation, tortoise handling, artificial burrow construction, egg handling and other procedures shall be consistent with those described in the USFWS 2013 Desert Tortoise Field Manual (https://www.fws.gov/carlsbad/PalmSprings/DesertTortoise.html) or more current guidance provided by CDFW and USFWS. The project owner shall also implement all terms and conditions described in the Biological Opinion prepared by USFWS. These measures include, but are not limited to, the following:

1. **Desert Tortoise Fencing along Interstate 10.** To avoid increases in vehicular-related mortality from disruption of local movement patterns along the existing ephemeral wash systems, desert tortoise-proof fencing shall be installed along the existing freeway right-of-way fencing, on both sides of I-10, for the entire east-west dimension of the project configuration. The tortoise fencing shall be designed to direct tortoises to existing undercrossing to provide safe passage under the freeway, and shall be regularly inspected and maintained for the life of the Project. Should the completion of this be deemed impractical (e.g., construction logistics, securing agreement with Caltrans, etc.), the BLM may substitute another project or location with equivalent desert tortoise benefit.

2. **Desert Tortoise Exclusion Fence Installation.** To avoid impacts to desert tortoises, permanent desert tortoise exclusion fencing shall be installed in areas likely to be used by desert tortoise (e.g., not the sandfields) along the permanent perimeter security fence and temporarily installed along the utility corridors. The proposed alignments for the permanent perimeter fence and utility rights-of-way fencing shall be flagged and surveyed within 24 hours prior to the initiation of fence construction. Clearance surveys of the perimeter fence and utility rights-of-way alignments shall be conducted by the Designated Biologist(s) using techniques outlined in the USFWS 2013 Desert Tortoise Field Manual and may be conducted in any season with USFWS and CDFW approval. Biological Monitors may assist the Designated Biologist, under his or her supervision. These fence clearance surveys shall provide 100 percent coverage of all areas to be disturbed and an additional transect along both

sides of the fence line. This fence line transect shall cover an area approximately 90 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS 2013 Desert Tortoise Field Manual. Any desert tortoise located during fence clearance surveys shall be handled by the Designated Biologist(s) in accordance with the USFWS 2013 Desert Tortoise Field Manual.

- **Timing, Supervision of Fence Installation.** The exclusion fencing shall be installed prior to the onset of site clearing and grubbing. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present.
- **Fence Material and Installation.** The permanent tortoise exclusionary fencing shall be constructed in accordance with the USFWS 2013 Desert Tortoise Field Manual (Chapter 8 – Desert Tortoise Exclusion Fence).
- **Security Gates.** Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time. Cattle grating designed to safely exclude desert tortoise shall be installed at the gated entries to discourage tortoises from gaining entry.
- **Fence Inspections.** Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary fencing in the utility corridors, the fencing shall be regularly inspected. If tortoise were moved out of harm's way during fence construction, permanent and temporary fencing shall be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and during and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of permanent site fencing shall occur for the life of the Project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing during and within 24 hours following major rainfall events. All damaged temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise.

3. **Desert Tortoise Clearance Surveys within the Plant Site.** Clearance surveys shall be conducted in accordance with the USFWS Desert Tortoise Field Manual (USFWS, 2013) (Chapter 6 – Clearance Survey Protocol for the Desert Tortoise – Mojave Population) and shall consist of two surveys covering 100 percent the project area by walking transects no more than 15 feet

apart. If a desert tortoise is located on the second survey, a third survey shall be conducted. Each separate survey shall be walked in a different direction to allow opposing angles of observation. Clearance surveys of the project site may only be conducted when tortoises are most active (April through May or September through October) unless the Project receives approval from CDFW and USFWS. Clearance surveys of linear features may be conducted during any time of the year. Any tortoise located during clearance surveys of the power plant site and linear features shall be translocated or relocated and monitored in accordance with the project's Desert Tortoise Relocation/Translocation Plan:

- **Burrow Searches.** During clearance surveys all desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined by the Designated Biologist, who may be assisted by the Biological Monitors, to assess occupancy of each burrow by desert tortoises and handled in accordance with the USFWS Desert Tortoise Field Manual (USFWS, 2013). To prevent re-entry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined in accordance with the Desert Tortoise Relocation/Translocation Plan. Tortoises taken from burrows and from elsewhere on the power plant site shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan.
- **Burrow Excavation/Handling.** All potential desert tortoise burrows located during clearance surveys would be excavated by hand, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises in accordance with the Desert Tortoise Relocation/Translocation Plan. All desert tortoise handling, and removal, and burrow excavations, including nests, would be conducted by the Designated Biologist, who may be assisted by a Biological Monitor in accordance with the USFWS Desert Tortoise Field Manual (USFWS, 2013).

4. **Monitoring Following Clearing.** Following the desert tortoise clearance and removal from the power plant site and utility corridors, workers and heavy equipment shall be allowed to enter the project site to perform clearing, grubbing, leveling, and trenching activities. A Designated Biologist or Biological Monitor shall be on the site for clearing and grading activities to monitor for any potential tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be relocated or translocated by a USFWS Authorized Biologist as described in the Desert Tortoise Relocation/Translocation Plan.
5. **Reporting.** The Designated Biologist shall record the following information for any desert tortoises handled: (a) the locations (narrative and maps) and dates of observation; (b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; (c) location moved from and location moved to (using GPS technology); (d) gender, carapace length, and diagnostic markings (i.e., identification numbers or

marked lateral scutes); (e) ambient temperature when handled and released; and (f) digital photograph of each handled desert. Desert tortoise moved from within project areas shall be marked and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan.

WIL-2 **Desert Tortoise Relocation/Translocation Plan.** The project owner shall develop and implement a final Desert Tortoise Relocation/Translocation Plan (Plan) that is consistent with current USFWS approved guidelines, and meets the approval of the BLM AO. The Plan shall include measures to avoid the potential for repeated translocations of individual desert tortoises. The goals of the Desert Tortoise Relocation/Translocation Plan shall be to: relocate/translocate all desert tortoises from the project site to nearby suitable habitat; minimize impacts on resident desert tortoises outside the project site; minimize stress, disturbance, and injuries to relocated/translocated tortoises; and assess the success of the translocation effort through monitoring. The final Plan shall be based on the draft Desert Tortoise Relocation/Translocation Plan prepared by the former Applicant (AECOM 2010a, Attachment DR-BIO-55) and shall include all revisions deemed necessary by BLM, USFWS, and CDFW.

WIL-3 **Desert Tortoise Compliance Verification.** The project owner shall provide BLM, CDFW and USFWS staff with reasonable access to the project site and compensation lands under the control of the project owner and shall otherwise fully cooperate with the County's and BLM's efforts to verify the project owner's compliance with, or the effectiveness of, mitigation measures. The Designated Biologist shall do all of the following:

1. **Notification.** Notify the BLM AO at least 14 calendar days before initiating construction-related ground disturbance activities; immediately notify the BLM AO in writing if the project owner is not in compliance with any conditions of certification, including but not limited to any actual or anticipated failure to implement mitigation measures within the time periods specified;
2. **Monitoring During Grubbing and Grading.** Remain on site daily while vegetation salvage, grubbing, grading and other ground-disturbance construction activities are taking place to avoid or minimize take of listed species, and verify personally or use Biological Monitors to check for compliance with all impact avoidance and minimization measures, including checking all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones.
3. **Monthly Compliance Inspections.** Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to the BLM, USFWS and CDFW during construction.
4. **Notification of Injured or Dead Listed Species.** If an injured or dead listed species is detected within or near the project disturbance area, the BLM, the Ontario Office of CDFW, and the Palm Springs Office of USFWS shall be notified immediately by phone. Notification shall occur no later than noon on

the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident and include the following information as relevant:

a. **Injured Desert Tortoise.** If a desert tortoise is injured as a result of project-related activities during construction, the Designated Biologist shall immediately take it to a CDFW-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the project owner. Following phone notification as required above, the BLM, CDFW, and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, and location, circumstances of the incident, and the name of the facility where the animal was taken.

b. **Desert Tortoise Fatality.** If a desert tortoise is killed by project-related activities during construction or operation, a written report with the same information as an injury report shall be submitted to the BLM, the Ontario Office of CDFW, and the Palm Springs Office of USFWS. These desert tortoises shall be salvaged according to guidelines described in *Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise* (Berry, 2001). The project owner shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident.

5. **Final Listed Species Report.** The Designated Biologist shall provide the BLM AO a Final Listed Species Mitigation Report that includes, at a minimum: (1) a copy of the table in the BRMIMP with notes showing when each of the mitigation measures was implemented; (2) all available information about project-related incidental take of listed species; (3) information about other project impacts on the listed species; (4) construction dates; (5) an assessment of the effectiveness of mitigation measures in minimizing and compensating for Project impacts; (6) recommendations on how mitigation measures might be changed to more effectively minimize and mitigate the impacts of future Projects on the listed species; and (7) any other pertinent information, including the level of take of the listed species associated with the Project.

6. **Stop Work Order.** The BLM AO may issue the project owner a written stop work order to suspend any activity related to the construction or operation of the Project to prevent or remedy a violation of one or more conditions of certification (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition and/or restoration obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. The project owner shall comply with the stop work order immediately upon receipt thereof.

WIL-4 **Desert Tortoise Compensatory Mitigation.** To fully mitigate for habitat loss and potential take of desert tortoise, the project owner shall provide compensatory mitigation based on the size of the final project footprint. For purposes of this condition, the project footprint means all lands disturbed in the construction and operation of the Palen Project, including all project linears, as well as undeveloped areas inside the Project's boundaries that will no longer provide viable long-term habitat for the desert tortoise. To satisfy this condition, the project owner shall acquire, protect and transfer 5 acres of desert tortoise habitat for every acre of habitat within critical habitat and within the final project footprint, and 1 acre of desert tortoise habitat for every acre of habitat outside of critical habitat but within the final project footprint, and provide associated funding for the acquired lands, as specified below. In addition to or substitute for acquisition, restoration of degraded BLM land in ACEC and/or California Desert National Conservation Lands will satisfy the mitigation obligation. In lieu of acquiring or restoring land itself, the project owner may satisfy the requirements of this condition by depositing funds into the Renewable Energy Action Team (REAT) Account established with the National Fish and Wildlife Foundation (NFWF), as provided below in section 3.i of this measure. If compensation lands are acquired in fee title or in easement, the requirements for acquisition, initial improvement and long-term management of compensation lands include all of the following:

1. **Selection Criteria for Compensation Lands.** The compensation lands selected for acquisition in fee title or in easement shall meet the criteria listed below. Compensation habitat evaluated for compliance with this mitigation measure may additionally be evaluated for creosote ring occurrence as described in APM 50.

   a. be within the Colorado Desert Recovery Unit, with potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve lands;

   b. provide habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed;

   c. be prioritized near larger blocks of lands that are already protected as ACEC and/or California Desert National Conservation Lands within the Colorado Desert Recovery Unit (Chuckwalla ACEC as first priority, Chemehuevi ACEC as the second) or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

   d. be connected to lands with desert tortoise habitat equal to or better quality than the project site, ideally with populations that are stable, recovering, or likely to recover;

   e. not have a history of intensive recreational use or other disturbance that does not have the capacity to regenerate naturally when disturbances are removed or might make habitat recovery and restoration infeasible;

f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

g. not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and

h. have water and mineral rights included as part of the acquisition, unless the BLM, in consultation with CDFW and USFWS, agrees in writing to the acceptability of the land.

2. **Review and Approval of Compensation Lands Prior to Acquisition.** The project owner shall submit a formal acquisition proposal to the CDFW, USFWS, and BLM describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed above. Approval from the CDFW, in consultation with BLM and the USFWS, shall be required for acquisition of all compensatory mitigation parcels.

3. **Compensation Lands Acquisition Requirements.** The project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CDFW, in consultation with BLM and the USFWS, have approved the proposed compensation lands:

a. **Preliminary Report.** The project owner, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CDFW. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CDFW, in consultation with BLM and the USFWS. For conveyances to the State, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board.

b. **Title/Conveyance.** The project owner shall transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement as required by the CDFW. Transfer of either fee title or an approved conservation easement will usually be sufficient, but some situations, e.g., the donation of lands burdened by a conservation easement to BLM, will require that both types of transfers be completed. Any transfer of a conservation easement or fee title must be to CDFW, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM under terms approved by CDFW. If an approved non-profit organization holds title to the compensation lands, a conservation easement shall be recorded in favor of CDFW in a form approved by CDFW. If an approved non-profit holds a conservation easement, CDFW shall be named a third-party beneficiary.

c. **Initial Habitat Improvement Fund.** The project owner shall fund the initial protection and habitat improvement of the compensation lands. Alternatively, a non-profit organization may hold the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code section 65965) and if it meets the approval of CDFW and the BLM. If CDFW takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFW or its designee.

d. **Property Analysis Record.** Upon identification of the compensation lands, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate long-term maintenance and management fee to fund the in-perpetuity management of the acquired mitigation lands.

e. **Long-term Maintenance and Management Fund.** The project owner shall deposit in NFWF's REAT Account a capital long-term maintenance and management fee in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands. CDFW may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFW takes fee title to the compensation lands, CDFW shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFW and with CDFW supervision.

f. **Interest, Principal, and Pooling of Funds.** The project owner and CDFW shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the following conditions:

   (i) **Interest.** Interest generated from the initial capital long-term maintenance and management fee shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFW designed to protect or improve the habitat values of the compensation lands.

   (ii) **Withdrawal of Principal.** The long-term maintenance and management fee principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFW or the approved third-party long-term maintenance and management fee manager to ensure the continued viability of the species on the compensation lands. If CDFW takes fee title to the compensation lands, monies received by CDFW pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity

unless CDFW designates NFWF or another entity to manage the long-term maintenance and management fee for CDFW.

(iii) **Pooling Long-Term Maintenance and Management Fee Funds.** CDFW, BLM, and CDFW-approved non-profit organization qualified to hold long-term maintenance and management fees solely for the purpose to manage lands in perpetuity, may pool the endowment with other endowments for the operation, management, and protection of the compensation lands for local populations of desert tortoise. However, for reporting purposes, the long-term maintenance and management fee fund must be tracked and reported individually to the CDFW and BLM.

g. **Other Expenses.** In addition to the costs listed above, the project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to title and document review costs, expenses incurred from other state agency reviews, and overhead related to providing compensation lands to CDFW or an approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures.

h. **Mitigation Security.** The project owner shall provide financial assurances to CDFW with copies of the document(s) to BLM and the USFWS, to guarantee that an adequate level of funding is available to implement the mitigation measures described in this condition. These funds shall be used solely for implementation of the measures associated with the Project in the event the project owner fails to comply with the requirements specified in this condition, or shall be returned to the project owner upon successful compliance with the requirements in this condition. The BLM or CDFW's use of the security to implement measures in this condition may not fully satisfy the project owner's obligations under this condition. Financial assurance can be provided to the BLM and CDFW in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security, the project owner shall obtain the BLM's approval in consultation with CDFW and the USFWS, of the form of the Security. The actual costs to comply with this condition will vary depending on the final footprint of the Project and the actual costs of acquiring, improving and managing the compensation lands.

i. **NFWF REAT Account.** The project owner may elect to fund the acquisition and initial improvement of compensation lands through NFWF by depositing funds for that purpose into NFWF's REAT Account. Initial deposits for this purpose must be made in the same amounts as the security required in section 3.h., above, and may be provided in lieu of security. If this option is used for the acquisition and initial improvement, the project owner shall make an additional deposit into the REAT Account if necessary to cover the actual acquisition costs and administrative costs and fees

of the compensation land purchase once land is identified and the actual costs are known. If the actual costs for acquisition and administrative costs and fees are less than the initial deposit the excess money deposited in the REAT Account shall be returned to the project owner. Money deposited for the initial protection and improvement of the compensation lands shall not be returned to the project owner. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the CDFW. Such delegation shall be subject to approval by CDFW, in consultation with BLM and USFWS, prior to land acquisition, initial protection or maintenance and management activities. Agreements to delegate land acquisition to an approved third party, or to manage compensation lands, shall be implemented with 18 months of issuance of BLM's grant of a right-of-way.

WIL-5 **Raven Management Plan and Fee.** The project owner shall implement a Raven Monitoring, Management, and Control Plan (Raven Plan) that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of the BLM AO, in consultation with USFWS and CDFW. The draft Common Raven Monitoring, Management, and Control Plan submitted by the former Applicant (AECOM 2010a, Attachment DR-BIO-57) shall provide the basis for the final Raven Plan, subject to review, revisions and approval from the BLM AO, CDFW, and USFWS. The Raven Plan shall include but not be limited to a program to monitor raven presence in the project vicinity, determine if raven numbers are increasing, and to implement raven control measures as needed based on that monitoring. The purpose of the plan is to avoid any project-related increases in raven numbers during construction, operation, and decommissioning. In addition, the project owner shall also provide funding for implementation of the USFWS Regional Raven Management Program, as described below.

1. The Raven Plan shall:
   a. Identify conditions associated with the Project that might provide raven subsidies or attractants;
   b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities;
   c. Describe control practices for ravens;
   d. Establish thresholds that would trigger implementation of control practices;
   e. Address monitoring and nest removal during construction and for the life of the Project, and;
   f. Discuss reporting requirements.
2. **USFWS Regional Raven Management Program.** The project owner shall submit payment to the project sub-account of the REAT Account held by the National Fish and Wildlife Foundation (NFWF) to support the USFWS Regional Raven Management Program. The one-time fee shall be as described

by the USFWS in the *Renewable Energy Development and Common Raven Predation on the Desert Tortoise – Summary, dated May 2010* (USFWS, 2010a) and the Cost Allocation Methodology for Implementation of the Regional Raven Management Plan, dated July 9, 2010) or more current guidance as provided by USFWS or CDFW (USFWS, 2010b).

WIL-6 **Pre-construction Nest Surveys and Avoidance Measures.** Pre-construction nest surveys shall be conducted if construction activities would occur from February 1 through July 31. The Designated Biologist or Biological Monitor conducting the surveys shall be experienced bird surveyors familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). The goal of the nesting surveys shall be to identify the general location of the nest sites, sufficient to establish a protective buffer zone around the potential nest site, and need not include identification of the precise nest locations. Surveyors performing nest surveys shall not concurrently be conducting desert tortoise or any other surveys. The bird surveyors shall perform surveys in accordance with the following guidelines:

1. Surveys shall cover all potential nesting habitat in areas that could be disturbed by construction. Surveys shall also include areas within 500 feet of the boundaries of the active construction areas (including linear facilities);
2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys shall be conducted within the 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed three weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation;
3. If active nests or suspected active nests are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFW) and monitoring plan shall be developed to avoid or minimize construction-related disturbance at any active nests throughout the nesting season. Nest locations shall be mapped and submitted, along with a report stating the survey results to the BLM AO; and
4. The Designated Biologist or Biological Monitor shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made.

WIL-7 **Bird and Bat Conservation Strategy (BBCS).** The project owner shall prepare and implement a BBCS to monitor the death and injury of birds from collisions with facility features such as transmission lines solar panels, and other project facilities. The monitoring data shall be used to inform an adaptive management program that would avoid and minimize project-related avian impacts. The study design shall be approved by BLM, CDFW and USFWS, and shall be consistent with guidance from the USFWS on development of BBCSs. The monitoring and

adaptive management measures described in the BBCS shall be incorporated into the Project's BRMIMP and implemented. The BBCS shall include detailed specifications on data and carcass collection protocol and a rationale justifying the proposed schedule of carcass searches. The plan shall also include seasonal trials to assess bias from carcass removal by scavengers as well as searcher bias. The BBCS

The BBCS shall also address recent developments in understanding and mitigating for the lake effect.

WIL-8 **American Badger and Desert Kit Fox Impact Avoidance and Minimization Measures.** To avoid direct impacts to American badgers and desert kit fox, pre-construction surveys shall be conducted for these species concurrent with the desert tortoise surveys to facilitate passive relocation. Surveys shall be conducted as described below:

1. Biological Monitors shall perform pre-construction surveys for badger and kit fox dens in the project disturbance area and a 20-foot buffer beyond the project disturbance area, including utility corridors and access roads. If dens are detected each den shall be classified as inactive, potentially active, or definitely active. Surveys may be concurrent with desert tortoise surveys.
2. Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox.
3. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by a Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance.
4. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand.
5. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den. BLM approval may be required prior to release of badgers on public lands.

Active or potentially active dens shall be flagged and project activities, with exceptions as listed below, within 100 feet (non-natal dens) or 500 feet (natal dens or any active den during the breeding season) shall be avoided. Ingress/egress of construction vehicles and equipment through buffers and low intensity activities such as inspections within buffers is allowed, provided a qualified biologist determines that these activities will not impact dens or denning animals. Buffers may be modified with concurrence of BLM, in consultation with CDFW and USFWS.

WIL-9 **Burrowing Owl Impact Avoidance, Minimization, and Compensation Measures.** The project owner shall implement the following measures to avoid, minimize and offset impacts to burrowing owls:

1. **Pre-Construction Surveys.** The Designated Biologist or Biological Monitor shall conduct pre-construction surveys for burrowing owls no more than 30 days prior to initiation of construction activities. Surveys shall be focused exclusively on detecting burrowing owls, and shall be conducted from two hours before sunset to 1 hour after or from 1 hour before to 2 hours after sunrise. The survey area shall include the project disturbance area and surrounding 500-foot survey buffer.

2. **Implement Burrowing Owl Mitigation Plan.** The project owner shall implement measures described in the final Burrowing Owl Mitigation Plan. The final Burrowing Owl Mitigation Plan shall follow the recommendations of CDFW's 2012 Staff Report on Burrowing Owl Mitigation, be approved by the BLM AO, in consultation with USFWS and CDFW, and shall:

   a. identify suitable sites within 1 mile of the project disturbance areas for creation of artificial burrows or enhancement of existing burrows prior to passive relocation efforts;

   b. provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl;

   c. provide detailed methods and guidance for passive relocation of burrowing owls occurring within the project disturbance area;

   d. require that passive relocation will take place only during the non-breeding season (September 1 to February 1); and

   e. describe monitoring and management of the passive relocation effort, including the created or enhanced burrow location and the project area where burrowing owls were relocated from, and provide a reporting plan.

3. **Implement Avoidance Measures.** If an active burrowing owl burrow is detected within 500 feet from the project disturbance area, the following avoidance and minimization measures shall be implemented:

   a. **Establish Non-Disturbance Buffer.** Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1 through January 31). Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer.

   b. **Monitoring.** If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1 to August 31) the Designated Biologist or Biological Monitor shall monitor to determine if

these activities have potential to adversely affect nesting efforts, and shall make recommendations to minimize or avoid such disturbance.

4. **Acquire Burrowing Owl Habitat.** The project owner shall acquire, in fee or in easement land suitable to support a resident population of burrowing owls and shall provide funding for the enhancement and long-term management of these compensation lands. The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFW or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the BLM AO, in consultation with CDFW and USFWS prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat.

   a. **Criteria for Burrowing Owl Mitigation Lands.** The terms and conditions of this acquisition or easement shall be as described in Mitigation Measure WIL-4 (Desert Tortoise Compensatory Mitigation), with the additional criteria to include: (1) mitigation land that must provide suitable habitat for burrowing owls, and (2) the acquisition lands must either currently support burrowing owls or be no farther than 5 miles from an active burrowing owl nesting territory. The burrowing owl mitigation lands may be included with the desert tortoise mitigation lands ONLY if these two burrowing owl criteria are met. If the burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands, the project owner shall fulfill the requirements described below in this condition.

   b. **Security.** If the burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands the project owner or an approved third party shall complete acquisition of the proposed compensation lands within the time period specified for this acquisition (see the verification section at the end of this condition). Alternatively, financial assurance can be provided by the project owner to the BLM APO and CDFW, according to the measures outlined in Mitigation Measure Mitigation Measure WIL-4. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the BLM AO in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") prior to initiating ground-disturbing project activities. Prior to submittal, the Security shall be approved by the BLM AO, in consultation with CDFW and the USFWS to ensure funding. The final amount due will be determined by an updated appraisal and PAR analysis conducted as described in Mitigation Measure WIL-4. CDFW's 2012 Staff Report on Burrowing Owl Mitigation shall control to the extent the provisions of this measure conflict with it.

WIL-10 **Sand Dune/Mojave Fringe-toed Lizard Mitigation.** To mitigate for habitat loss and direct impacts to Mojave fringe-toed lizards, the project owner shall provide

compensatory mitigation, which may include compensation lands purchased in fee or in easement in whole or in part, at the ratios below. Compensation may be accomplished through acquisition and management of off-site habitat (subsection I below) or, if suitable compensation habitat is not available, through off-site habitat enhancement and restoration (subsection II below).

- 3:1 mitigation for direct impacts to stabilized and partially stabilized sand dunes (per final acreage impacted by the project footprint);
- 1:1 mitigation for direct impacts non-dune Mojave fringe-toed lizard habitat as shown on Figure 3.21-5 (per final acreage impacted by the project footprint); and
- 0.5:1 mitigation for indirect impacts to stabilized and partially stabilized sand dunes (per or final acreage impacted by the project footprint).

I. Compensation Habitat Acquisition. If compensation lands are acquired, the project owner shall provide funding for the acquisition in fee title or in easement, initial habitat improvements, and long-term maintenance and management of the compensation lands. Compensation habitat evaluated for compliance with this mitigation measure may additionally be evaluated for creosote ring occurrence as described in APM 50.

1. **Criteria for Compensation Lands.** The compensation lands selected for acquisition shall:

   a. Provide suitable habitat for Mojave fringe-toed lizards, and, aside from the minimum amount of stabilized and partially stabilized sand dunes, may include stabilized and partially stabilized desert dunes, sand drifts over playas, or Sonoran creosote bush scrub;

   b. Be within the Palen or Chuckwalla valleys with potential to contribute to Mojave fringe-toed lizard habitat connectivity and build linkages between known populations of Mojave fringe-toed lizards and preserve lands with suitable habitat;

   c. Be prioritized near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation;

   d. Provide quality habitat for Mojave fringe-toed lizard that has the capacity to regenerate naturally when disturbances are removed;

   e. Not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible;

   f. Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;

   g. Not contain hazardous wastes that cannot be removed to the extent the site is suitable for habitat;

h. Have water and mineral rights included as part of the acquisition, unless the BLM APO, in consultation with CDFW and USFWS, agrees in writing to the acceptability of the land; and

i. Be on land for which long-term management is feasible.

2. **Security for Implementation of Mitigation.** The project owner shall provide financial assurances to the BLM AO to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of Mojave fringe-toed lizard habitat as described in this condition. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the BLM AO according to the measures outlined in Mitigation Measure WIL-4. The final amount due will be determined by an updated appraisal and a PAR analysis conducted as described in Mitigation Measure WIL-4.

3. **Preparation of Management Plan.** The project owner shall submit to the BLM and CDFW a draft Management Plan that reflects site-specific enhancement measures for the Mojave fringe-toed lizard habitat on the acquired compensation lands. The objective of the Management Plan shall be to enhance the value of the compensation lands for Mojave fringe-toed lizards, and may include enhancement actions such as weed control, fencing to exclude livestock, erosion control, or protection of sand sources or sand transport corridors.

II. Compensatory Mitigation by Habitat Enhancement/Restoration. As an alternative or adjunct to land acquisition for compensatory mitigation the project owner may undertake habitat enhancement or restoration for MFTL in ACECs and/or California Desert National Conservation Lands. Habitat enhancement or restoration activities must achieve protection at the compensation ratios specified in the first paragraph of this measure (WIL-10), as follows: 3:1 mitigation for direct impacts to stabilized and partially stabilized sand dunes; 1:1 mitigation for direct impacts non-dune Mojave fringe-toed lizard habitat; and 0.5:1 mitigation for indirect impacts to stabilized and partially stabilized sand dunes. Examples of suitable enhancement projects include but are not limited to the following: (i) control unauthorized vehicle use into an MFTL occurrence; (ii) control of invasive non-native plants that infest or pose an immediate threat to an MFTL occurrence; (iii) restore lost or degraded hydrologic or geomorphic functions critical to the species by restoring previously diverted flows, or removing obstructions to the wind sand transport corridor.

If the project owner elects to undertake a habitat enhancement project for mitigation, it shall submit a Habitat Enhancement and Restoration Plan to the BLM AO for review and approval, and shall provide sufficient funding for implementation and monitoring specified in the Plan. The amount of the Security shall use the estimated cost per acre for Desert Tortoise mitigation as a best available proxy. The amount of the security may be adjusted based on the actual costs of implementing the enhancement, restoration and monitoring.

The implementation and monitoring may be undertaken by an appropriate third party such as NFWF, subject to approval by the BLM AO. The Habitat Enhancement and Restoration Plan shall include each of the following:

1. **Goals and Objectives.** Define the goals of the restoration or enhancement project and a measurable course of action developed to achieve those goals. The Habitat Enhancement and Restoration Plan shall include restoration of MFTL habitat that is currently threatened with a long-term decline.
2. **Historical Conditions.** Provide a description of the pre-impact or historical conditions (before the site was degraded by weeds, ORV, etc.), and the desired conditions.
3. **Site Characteristics.** Describe other site characteristics relevant to the restoration or enhancement project (e.g., composition of native and pest plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species).
4. **Ecological Factors.** Describe any other important ecological factors for MFTL at the site.
5. **Methods.** Describe the restoration methods that will be used (e.g., invasive exotics control, site protection, etc.) and the long-term maintenance required. The implementation phase of the enhancement must be completed within five years.
6. **Budget.** Provide a detailed budget and time-line, and develop clear, measurable, objective-driven annual success criteria.
7. **Monitoring.** Specify clear, measurable monitoring methods that will be used to evaluate the effectiveness of the restoration and the benefit to MFTL. The Plan shall include a minimum of five years of quarterly monitoring, and then annual monitoring for the remainder of the enhancement project, and until the performance standards are met. At a minimum the progress reports shall include: quantitative measurements of progress in meeting the success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.
8. **Reporting Program.** The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria. Include names of responsible parties.
9. **Contingency Plan.** Describe the contingency plan for failure to meet annual goals.
10. **Long-term Protection.** Include proof of long-term protection for the restoration site. For private lands this would include conservations easements or other deed restrictions; projects on public lands must be contained in a Desert Wildlife Management Area, Wildlife Habitat Management Area, or other land use protections that will protect the mitigation site and target species.

WIL-11 **Golden Eagle Inventory and Monitoring.** The project owner shall implement the following measures to avoid or minimize project-related construction impacts to golden eagles.

1. **Annual Inventory during Construction.** For each calendar year during which construction will occur an inventory shall be conducted to determine if golden eagle territories occur within one mile of the project boundaries. Survey methods for the inventory shall be as described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al., 2010) or more current guidance from the USFWS.
2. **Inventory Data.** Data collected during the inventory shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; digital photographs; and substrate upon which nest is placed.
3. **Determination of Unoccupied Territory Status.** A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles for the current breeding season ONLY after completing at least 2 full surveys in a single breeding season. In circumstances where ground observation occurs rather than aerial surveys, at least 2 ground observation periods lasting at least 4 hours or more are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods shall be at least 30 days apart for an inventory, and at least 30 days apart for monitoring of known territories.
4. **Monitoring and Adaptive Management Plan.** If an occupied nest is detected within one mile of the project boundaries, the project owner shall prepare and implement a Golden Eagle Monitoring and Adaptive Management Plan for the duration of construction to ensure that project construction activities do not result in injury or disturbance to golden eagles. The monitoring methods shall be consistent with those described in the Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations (Pagel et al., 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be prepared in consultation with the USFWS. Triggers for adaptive management shall include any evidence of project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Adaptive Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.

WIL-12 **Water Tank Covers.** During the construction, O&M, and decommissioning phases, the project owner shall cover all open water storage tanks, immediately

after installation and prior to adding water to the tanks, with a solid material (i.e., not netting) to exclude birds and other wildlife from becoming trapped in the tank while attempting to access the water. The BLM will review and approve the type of cover to be used prior to installation.

1. **Monthly Monitoring.** Subject to applicable safety requirements, the Designated Biologist or Biological Monitors shall regularly survey the tanks at least once per month starting with the first month of operation of the tanks. The purpose of the surveys shall be to determine if the tank covers are effective in excluding birds and wildlife, if the covers pose an entrapment hazard to birds and wildlife, and to assess the structural integrity of the covers. If safety requirements do not allow the Designated Biologist or Biological Monitor to survey the tanks, project construction or operations personnel will provide assistance as needed to accomplish the survey.
2. Operations staff at the project site shall also report finding any dead or injured birds or other wildlife in or near the tanks to the Designated Biologist within 1 day of the detection of the carcass.
3. The Designated Biologists shall report any bird or other wildlife deaths or injuries within 2 days of the discovery to the BLM AO, CDFW, and USFWS.
4. **Dead or Injured Birds.** If dead or injured birds are detected, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. Project construction or operations personnel will provide assistance as needed to accomplish the remedial action. The Designated Biologist shall make immediate efforts to contact and consult with the BLM AO, CDFW, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking action that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the tanks.
5. **Quarterly Monitoring.** If after 12 consecutive monthly site visits, no bird or wildlife deaths or injuries are detected at the tanks by or reported to the Designated Biologist, monitoring, as described in Item 1, can be conducted on a quarterly basis.
6. **Biannual Monitoring.** If after 12 consecutive quarterly site visits, no bird or wildlife deaths or injuries are detected by or reported to the Designated Biologist and with approval from the BLM AO, USFWS, and CDFW, future surveys may be reduced to 2 surveys per year, during the spring nesting season and during fall migration. If approved by the BLM AO, USFWS, and CDFW, monitoring outside the nesting season may be conducted by the Environmental Compliance Manager.
7. **Modification of Monitoring Program.** BLM, CDFW, or USFWS may submit a request for modifications to the tank monitoring program based on information acquired during monitoring, and may also suggest adaptive management measures to remedy any problems that are detected during

monitoring or modifications if bird impacts are not observed. Modifications to the tank monitoring described above and implementation of adaptive management measures shall be made only after approval from the BLM AO, in consultation with USFWS and CDFW.

If storage tanks no longer contain water, monitoring will continue unless alternative provision is made to ensure wildlife does not become trapped in the tank. Storage tanks no longer in use shall be removed from the project site. Tank covers and monitoring may be discontinued only with approval of the BLM AO, USFWS, and CDFW.

4.21.5 Residual Effects after Implementation of Mitigation Measures

The Proposed Action and Alternatives 1 and 2 would eliminate all native habitat for wildlife within the solar facility and would directly and indirectly affect an extensive network of desert washes in the disturbance area and downstream. Mitigation measures to avoid, minimize, or compensate for the loss would offset the impacts but could not prevent or avoid the net loss of habitat. Routes of wildlife movement along washes would be interrupted, and wildlife movement across the site would be severely curtailed due to perimeter fencing. Alternatives 1 and 2 would reduce, but not eliminate, the impacts to habitat and wildlife movement routes.

In addition to direct loss of habitat, the Proposed Action would fragment and degrade adjacent native wildlife communities, and could promote the spread of invasive non-native plants and increase the presence of desert tortoise predators such as ravens. These habitats provide foraging, cover, and breeding habitat for a variety of resident wildlife, including desert tortoise, American badger, desert kit fox, golden eagle, migratory birds, burrowing owl, desert bighorn sheep, burro deer, and MFTL.

Project-specific and cumulative residual impacts remaining after the implementation of recommended mitigation measures could be addressed only through a regional and coordinated effort aimed at preserving and enhancing large, intact expanses of wildlife habitat and linkages, including maintaining connections between ACECs and/or California Desert National Conservation Lands and other movement corridors.

Mitigation Measure WIL-7 would require a Bird and Bat Conservation Strategy to monitor the death and injury of birds; resulting data would be used to inform an adaptive management program intended to avoid and minimize project-related avian impacts. APM-52 requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the Project. However, unquantifiable collision impacts could remain.

4.21.6 Unavoidable Adverse Impacts

Under the Proposed Action and Alternatives 1 and 2, native wildlife communities would be lost in the project disturbance area; see Tables 4.17-1 and 4.17-2. Indirect losses to wildlife habitats and communities would occur adjacent and downwind from the Proposed Action, including habitat for desert tortoise, MFTL, American badger, desert kit fox, golden eagle foraging, burrowing owl, and other special status and migratory birds. Indirect losses include degradation and

fragmentation of adjacent wildlife communities, decreasing regional connectivity and dispersal of resident wildlife. Additionally, the Proposed Action is likely to promote the spread of invasive non-native plants and to subsidize desert tortoise predators. Construction, operation, or maintenance activities could result in some death, harm, harassment, removal, or capture of wildlife, including eggs and nests, and so constitute an unavoidable loss of individual animals.

Impacts to most wildlife resources could be addressed adequately through the implementation of recommended mitigation measures.

4.21.7 CEQA Significance Thresholds and Determinations

Significance criteria are used to characterize the nature of potential impacts and determine the significance of such impacts under CEQA. Significance criteria presented in Appendix G of the CEQA Guidelines are often used for this purpose. The following list includes the CEQA Guidelines Appendix G criteria relevant to wildlife resources and applicable to the Project. Any significance criteria that are not applicable to the Proposed Action or an alternative are identified following this list; only those criteria applicable to the Project or an alternative are used in the impact analysis.

WIL-1 Have a substantial adverse direct or indirect effect on any candidate, sensitive, or special-status species identified by local, state, or federal agencies.

WIL-2 Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

WIL-3 Conflict with any applicable local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

WIL-4 Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state conservation plan.

A project may result in a significant adverse cumulative impact where its effects are "cumulatively considerable." Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

The following analyses for the Proposed Action and alternatives addresses potential impacts under Significance Criteria WIL-1 through WIL-4.

WIL-1: Candidate, Sensitive, or Special-status Species

The results of surveys conducted between 2009 and 2016 indicate that the Proposed Action could impact several special status wildlife species. See Section 3.21 (Wildlife Resources) and Table 3.21-1 for a discussion of each special status wildlife species that is present or potentially present on or near the project site.

Direct impacts to special status wildlife may include mortality, injury, or displacement; loss or degradation of native habitat; interference with movement or migration; and disturbance from noise and light.

Indirect impacts to wildlife habitat include erosion, sedimentation, and introduction of invasive species that may cause habitat degradation. An example of an indirect effect to wildlife is increased predation due to certain habitat alterations (e.g., creation of perch sites or "subsidies" for predators). See Section 4.21.2 for a detailed discussion of direct and indirect impacts to special status wildlife species.

Under the Proposed Action and Alternatives 1 and 2, the direct and indirect impacts of project construction, O&M, and decommissioning to wildlife resources, including wildlife habitat loss and potential take of special status wildlife species including desert tortoise, Mojave fringe-toed lizard, and special status birds, as described in Section 4.21.2, would be significant under Criterion WIL-1 (impacts to special status wildlife and habitat, including listed threatened or endangered species).

Mitigation measures including avoidance, minimization, and compensation are recommended to offset direct and indirect impacts to special status wildlife and habitat. These mitigation measures are presented in Section 4.21.4. Before applying mitigation measures to reduce project impacts, the analysis first considers the effect of the APMs (Section 2.2.7, Chapter 2). Table 4.21-3 explains how these measures reduce project effects, and how they relate to mitigation measures.

With implementation of mitigation measures as described in Section 4.21.2, most of these impacts to wildlife resources would be mitigated to less-than-significant levels under CEQA by minimizing habitat impacts to the extent practicable, mitigating direct impacts to special-status wildlife, avoiding impacts to nesting and migratory birds, controlling potential subsidies for ravens or other predators, providing for long-term conservation and management of native habitat on compensation lands, and other actions as described above. Adverse residual impacts (Section 4.21.6) would remain; most would be less than significant under the CEQA criteria.

Direct and indirect impacts to the sand transport system and MFTL habitat under the Proposed Action and Alternative 1 would be significant under Criterion WIL-1. With implementation of Mitigation Measure WIL-10 (Sand Dune Community/Mojave Fringe-toed Lizard Mitigation), direct and indirect impacts could be mitigated to a less than significant level by providing for long-term conservation and management of sand dune habitat on compensation lands. However, it is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase or whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values. Therefore, with implementation of Mitigation Measure WIL-10 to the extent it is feasible, the effects of the Proposed Action and Alternative 1 may not be mitigated to less than significant and the impact would remain significant and unavoidable. Alternative 2 (Avoidance Alternative) would have substantially less direct or indirect impact to MFTL and its habitat, and the impacts of either alternative to MFTL would be less than significant with incorporation of recommended mitigation.

Mitigation Measure WIL-7 would require a Bird and Bat Conservation Strategy to monitor the death and injury of birds; resulting data would be used to inform an adaptive management

program intended to avoid and minimize project-related avian impacts. APM-52 requires implementation of a bird and bat adaptive management program to respond to detected mortality and injuries of birds and bats attributable to the Project. Mortality levels are not anticipated to be high enough to result in long-term loss of population viability or a trend toward State listing for common species. However, individual special status bird or listed species may be affected. Mitigation Measure WIL-7 requires that the Bird and Bat Conservation Strategy be consistent with guidance from the USFWS and approved by the BLM, CDFW, and USFWS. With implementation of Mitigation Measure WIL-7 and APM-52, most impacts of the Proposed Action and Alternatives 1 and 2 to special status birds would be less than significant. However, the potential impacts of avian collision with project facilities and "lake effect" cannot be fully evaluated and would remain significant and unavoidable because the scale of the potential impact is uncertain and the effects of adaptive management measures are unknown.

WIL-2: Movement of Native Wildlife Species

Under the Proposed Action and Alternatives 1 and 2, direct and indirect impacts could be significant under Criterion WIL-2 (interfere substantially with the movement of native wildlife species) because project facilities and fencing would interfere with the movement of several wildlife species through the project area, and possibly would interfere with access to large channel underpasses beneath Interstate-10, where wildlife have safe north-south access across the freeway.

To mitigate impacts to wildlife habitat connectivity, Mitigation Measure WIL-1 (Desert Tortoise Protection) would require construction of desert tortoise exclusion fencing on both sides of I-10 to direct desert tortoise and other wildlife to safe passage under the freeway. Mitigation Measure VEG-8 (Impact Avoidance and Minimization Measures) would require designing all permanent project fencing to prevent potential entanglement of deer and other wildlife. With implementation of these measures, the impacts of the Proposed Action and Alternatives 1 and 2 under CEQA Criterion WIL-2 would be mitigated to less than significant.

WIL-3: Applicable Local Policies or Ordinances

There would be no impacts of the Proposed Action or Alternatives 1 and 2 under Criterion WIL-3 because the Proposed Action would not conflict with applicable local policies or ordinances that protect biological resources.

WIL-4: HCP, NCCP, or Other Conservation Plan

No Habitat Conservation Plans (HCPs), Natural Community Conservation Plans (NCCPs), or other Conservation Plans apply to the Proposed Action and Alternatives 1 and 2.

The project site is within the area covered by the DRECP, but the Proposed Action and Alternatives are exempt from provisions of the DRECP; see Section 2.4 (Alternative 2: Avoidance Alternative). The mitigation measures and APMs identified herein substantially conform to most DRECP requirements. Nevertheless, the Proposed Action and Alternative 1 do not conform to certain DRECP requirements for Mojave fringe-toed lizard and wash habitat avoidance. It is uncertain whether the Project's impacts to MFTL would be mitigable to less than significant even with implementation of mitigation measures and APMs. Impacts to desert wash habitat

would be less than significant with incorporation of mitigation measures and APMs identified above. Alternative 2 (the Avoidance Alternative) is included in this analysis to illustrate full conformance with the DRECP.

Since no HCPs, NCCPs, or other Conservation Plans apply to the Proposed Action and Alternatives 1 and 2, there would be no conflict and no impact would occur.

Cumulative Impacts

A number of potentially significant cumulative impacts to biological resources were identified and analyzed in Section 4.21.3. The Proposed Action or Alternatives 1 and 2 could contribute to cumulative effects to special status wildlife species, their habitat, and their movement among habitat areas. The analysis identifies past, present, and foreseeable future project that may cumulatively affect these resources. Mitigation measures and APMs are identified in the cumulative effects analysis that would reduce the Project's contribution to cumulative effects.

With implementation of the project-specific mitigation measures, the contribution to cumulative impacts from the Proposed Action or Alternatives 1 and 2 under Criterion WIL-1 (impacts to special status wildlife and habitat, including listed threatened or endangered species) would not be considerable. However, the Proposed Action and Alternative 1 could contribute considerably to cumulative loss of Mojave fringe-toed lizard habitat due to uncertainties about feasibility of Mitigation Measure WIL-10 (Sand Dune/Mojave Fringe-toed Lizard Mitigation). In addition, the Proposed Action and Alternatives 1 and 2 could contribute considerably to cumulative loss of special-status and migratory birds, depending on avian collision and lake effect.

Under Criterion WIL-2 (interfere substantially with the movement of native wildlife species) the Proposed Action or Alternatives 1 and 2, in combination with past, present, and foreseeable future projects, could cumulatively impact wildlife movement in the Chuckwalla Valley and, more broadly, throughout the CVCM. These effects could be cumulatively significant. Mitigation Measures WIL-1 (Desert Tortoise Protection) and VEG-8 (Impact Avoidance and Minimization Measures) would minimize the Project's impacts to wildlife movement. With implementation of Mitigation Measures WIL-1 and VEG-8, the contribution to cumulative impacts to wildlife movement and connectivity from the Proposed Action or Alternatives 1 and 2 would not be considerable.

There would be no significant impacts of the Proposed Action or Alternatives 1 and 2, cumulatively, under Criterion WIL-3 (conflict with local policies or ordinances that protect biological resources) because the Proposed Action would not conflict with applicable local policies or ordinances.

Under Criterion WIL-4 (conflict with HCP, NCCP, or other conservation plan) the Proposed Action and Alternative 1, in combination with past, present, and foreseeable future projects identified in Section 4.21.3 could cumulatively conflict with the DRECP LUPA. However, the Proposed Action and Alternative 1, with incorporation of APMs and Mitigation Measures identified in Section 4.21.4 are substantially compatible with the DRECP LUPA, and their contribution to any cumulative conflicts with the DRECP LUPA would not be considerable. Alternative 2, the Avoidance Alternative, would not contribute to any cumulative conflict with the DRECP LUPA.

4.22 Other CEQA and NEPA Considerations

4.22.1 Growth-Inducing Effects

Section 15126.2(d) of the State CEQA Guidelines provides the following guidance on growth-inducing impacts: a project is identified as growth inducing if it "could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment."

Potential growth-inducing components of the Project addressed in this section relate to the relationships between employment and potential local population growth and increased power generation and potential regional population growth.

Employment and Population Growth

Construction Workforce

The Project would require an average construction workforce of 175 workers per day during construction, with a peak number of workers estimated at 700 workers. Workers are expected to be hired primarily from the surrounding communities in Riverside County and San Bernardino County in California and La Paz County in Arizona. Some non-local specialty trade workers supporting proprietary plant equipment and components and construction processes may also be employed on a short-term basis during construction. The on-site workforce would consist of laborers, crafts people, and supervisory, support, supply, and construction management personnel.

The vacancy rate and the availability of temporary accommodation in the project study area indicate that the area has the capacity to temporarily house this workforce. Because the project area has sufficient available hotel and housing vacancies, temporary direct and indirect population growth impacts would not result from worker relocation.

As discussed in Section 3.13.2 (Existing Social Conditions), Riverside County and San Bernardino County have a combined construction labor force of 67,610 workers as of 2010. A maximum of 700 workers hired from within these counties would represent 1 percent of the total construction labor force of both counties combined. While a single project utilizing 1 percent of the total construction labor force of the project study area would be considered a substantial demand, considering the high unemployment rate in the area, this would be a beneficial impact in the project study area. As a temporary component, the construction phase would not trigger additional population growth in the area. No County-level construction employment data for La Paz County are available.

Operational Workforce

Operation of the Project would require overall plant management; plant operations and maintenance; and human resources, accounting, and administration staff and anticipates up to 12 permanent workers. Between one and three security staff will work on-site and the operations and maintenance building will house security staff 24-hours per day. Considering the less-than-2-hour drive between Desert Center and Palm Springs, Indio, and Blythe, it is anticipated that few workers would relocate to the area permanently.

Increased Power Generation

While the Project would contribute to energy supply, which indirectly supports population growth, development of the Project is a response to the State's need for renewable energy to meet its Renewable Portfolio Standard. Unlike a gas-fired power plant, the Project is not being developed as a source of base-load power that would typically be developed to support a growth in demand for electricity. The power generated would be added to the State's electricity grid, with the intent that it would displace fossil fuel fired power plants and their associated greenhouse gas emissions.

Riverside County planning documents permit and anticipate a certain level of growth, along with attendant growth in energy demand. The County General Plan Land Use Element addresses county growth and states that future growth in Riverside County should be directed to areas that are well served by public facilities and services and preserve significant environmental features, such as drainage ways, lands subject to extreme natural hazards, or lands that offer scenic beauty (Riverside County, 2008).

The Project would supply energy to accommodate and support existing demand and projected growth, but it would not foster any new growth, because (1) the additional energy would be used to ease the burdens of meeting existing statewide energy demands within and beyond the area of the project; (2) the energy would be used to support already-projected growth; or (3) the factors affecting growth are so diverse that any potential connection between additional energy production and growth would necessarily be too speculative and tenuous to merit extensive analysis.

4.22.2 Energy Consumption

In order to ensure that energy implications are considered in project decisions, CEQA requires that EIRs include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy (see Public Resources Code section 21100(b)(3)). According to Appendix F of the State CEQA Guidelines, the goal of conserving energy implies the wise and efficient use of energy including: (1) decreasing overall per capita energy consumption, (2) decreasing reliance on fossil fuels, and (3) increasing reliance on renewable energy sources.

The Project would help achieve this goal because it would develop a renewable source of power, helping to offset the use of nonrenewable resources and contribute to an overall reduction of nonrenewable resources currently used to generate electricity. In addition, Section 4.3 (Climate Change) describes effects on climate change/greenhouse gas emissions that would be caused by the implementation of the Project, including a discussion its effects on energy resources. Sections 4.2 (Air Resources) and 4.16 (Transportation and Public Access) also discuss energy consuming equipment and vehicle trips required by the Project and alternatives.

In the absence of the Project, other power plants, both renewable and nonrenewable, may have to be constructed to serve the demand for electricity and to meet the California Renewables Portfolio Standard (RPS). Existing gas-fired plants may operate longer in order to meet the demand for energy. The impacts of these other facilities may be similar to those of the Project because they require land areas comparable in size and impose environmental impacts comparable in degree to those required for the project, whether for energy production or fuel extraction. Additionally, the

environmental impacts of developing transmission capacity for such other power plants may be greater, especially where no transmission capacity exists or where energy production cannot be geographically concentrated to minimize the number of new transmission lines needed.

If the Project were not built, California utilities would not receive the 500 MW contribution to the renewable state-mandated energy portfolio. The Project is expected to generate approximately 1,598,683 MWh of renewable energy annually over its lifetime, a small but significant portion of the necessary new generation required to meet the goals of the RPS. In addition to contributing to renewable energy generation, specific measures and design features included by the project applicant in the Plan of Development that would conserve energy include:

- Preparation and implementation of a transportation plan describing how equipment and building materials would travel to the project site and how to encourage worker carpooling and alternative forms of transportation (MM TRANS-4); and
- Commitment to recycling components from the solar facility after decommissioning (Palen Solar Project Revised Plan of Development, Site Closure and Reclamation).

Specific requirements in project mitigation measures that would conserve energy and minimize inefficient and unnecessary consumption of energy include:

- Mitigation measure to control on-site diesel-fueled engine emissions (MM AQ-SC-5);
- Mitigation measure requiring the project owner develop a Construction Waste Management Plan (MM WASTE-4) and an Operation Waste Management Plan (MM WASTE-7) to increase recycling/reuse and minimize waste during construction and operation of the solar facility; and
- Mitigation measure requiring the project owner develop Groundwater Quality Monitoring and Reporting Plan (MM SOIL&WATER-18).

Compliance with the applicant measures and mitigation measures identified in this SEIS/SEIR, would ensure that the Project and alternatives would not involve wasteful, inefficient, or unnecessary consumption of energy.

4.22.3 Significant Unavoidable Environmental Impacts

Below is a summary of CEQA significant and unavoidable impacts. The Project is being analyzed in a Supplemental EIS under NEPA in addition to being analyzed in a Supplemental EIR; however, there is no requirement for the BLM to determine significance. Rather, the BLM must take a "hard look" at the impacts of the alternatives. Therefore, any determination of significance is a determination under CEQA, not NEPA.

Air Quality

Impact: Construction Emissions

CEQA Criterion AQ-2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

During construction, emissions would be generated at the site and along the highways and roadways used to access the site. Construction emissions would be caused by exhaust from vehicles

and equipment and fugitive dust/particulate matter from ground-disturbing activities and travel on unpaved surfaces. These emissions exceed the relevant regional significance thresholds for NOx, PM10, PM2.5, and CO. Significant, unavoidable impacts even with Mitigation Measures AQ-SC-1 through AQ-SC-8 would be temporary; these impacts would be limited to the duration of construction activities.

Cultural Resources

Impact: Historical, Archaeological, and Tribal Cultural Resources

CEQA Criterion CR-1: Cause a substantial adverse change in the significance of a historical resource.

The direct and indirect impacts of project construction, operation, and decommissioning, to historical resources would be significant. Information currently available from recent ethnographic interviews and tribal consultation associated with other projects suggests that the Project and Alternatives would not result in indirect impacts to the Palen Dry Lake ACEC. However, government-to-government consultation between BLM and interested tribes is ongoing to confirm that Palen Dry Lake ACEC is not eligible for the NRHP and CRHR under Criterion A/1 and that the Project would not result in impacts to this area. The Project Alternatives would result in direct impacts to CA-RIV-9481, the DTC/C-AMA associated 18th Ordinance Battalion Campsite. Mitigation Measures CUL 1 through CUL 14 and CUL-16 through CUL-20 would reduce the severity of impacts to historical resources and tribal cultural resources (those eligible for the CRHR) by putting procedures in place for their management and treatment. However, important resources that are not now known may be identified through ongoing tribal consultation or during construction. If the loss of these resources cannot be fully mitigated, the impacts would be significant and unmitigable.

CEQA Criterion CR-2: Cause a substantial adverse change in the significance of a (unique) archaeological resource.

The direct and indirect impacts of project construction, operation, and decommissioning, to unique archaeological resources could create significant impacts. However, they are not anticipated because no unique archaeological resources have been identified to date. If important archaeological resources are found during construction, implementation of MM CUL 1 through MM CUL 15 and MM CUL-16 through MM CUL-20 would reduce some of these impacts to less than significant levels. However, because the severity of the residual impact would depend on the value of each resource found and the extent of its destruction during construction, the impact may remain significant even with all mitigation implemented.

CEQA Criterion TCR-1: Cause a substantial adverse change in the significance of a tribal cultural resource identified through consultation with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project (Public Resources Code Section 21084.2).

The direct and indirect impacts of project construction, operation, and decommissioning, to tribal cultural resources could create significant impacts. However, they are not anticipated because no tribal cultural resources have been identified through tribal consultation. The implementation of MM CUL-1 through MM CUL-15 and MM CUL-16 through MM CUL-20 would reduce some of

these impacts to less than significant levels. However, if important resources are identified through ongoing consultation or as a result of discoveries during construction, some of the impacts may remain significant.

CEQA Criterion TCR-2: Cause a substantial adverse change in the significance of a tribal cultural resource listed in, or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources, and it is demolished or materially altered as described in State CEQA Guidelines section 15064.5 (b).

The direct and indirect impacts of project construction, operation, and decommissioning, to tribal cultural resources could create significant impacts. However, they are not anticipated because no tribal cultural resources that are eligible or listed on the CRHR have been identified. The implementation of MM CUL-1 through MM CUL-15 and MM CUL-16 through MM CUL-20 would reduce some of these impacts to less than significant levels. However, if important resources are identified through ongoing consultation or as a result of discoveries during construction, some impacts may remain significant and unmitigable.

Impact: Human Remains

CEQA Criterion CR-3: Disturb any human remains, including those interred outside of dedicated cemeteries.

The impacts of project construction, operation, and decommissioning to human remains are not anticipated because no human remains have been found in the project area. However, the remains of Native Americans are the most likely to be discovered within or nearby the project area. Tribal consultation indicates that both direct and indirect impacts to Native American remains would be partially addressed and reduced to less than significant levels by MM CUL-1 through MM CUL-15 and MM CUL-16 through MM CUL-20. However, if remains are found, these measures would not reduce impacts to less than significant levels; the impacts would remain significant.

Vegetation Resources

Impact: Sand Habitats and Sand Transport Corridor

CEQA Criterion VEG-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified by local, state, or federal agencies.

It is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase or whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values per Mitigation Measure WIL-10, Sand Dune/Mojave Fringe-toed Lizard Mitigation. Therefore, Mitigation Measures VEG-1 through VEG-9, VEG-11, VEG-13, WIL-4, and WIL-10 would reduce impacts on sand habitats and the sand transport corridor, but there may be significant and unmitigable direct and indirect effects on aeolian sand habitat and sand transport.

Impact: Cumulative Sand Habitats and Sand Transport Corridor Impacts

CEQA Criterion VEG-2: Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified by local, state, or federal agencies.

Similar to the above, it is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase or whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values per Mitigation Measure WIL-10, Sand Dune/Mojave Fringe-toed Lizard Mitigation. Mitigation Measures VEG-1 through VEG-9, VEG-11, VEG-13, WIL-4, and WIL-10 would reduce impacts on sand habitats and the sand transport corridor, but there may be a considerable contribution to the significant cumulative loss of aeolian sand habitat and sand transport.

Visual Resources

Impact: Effects on scenic vistas

CEQA Criterion VIS-1: Have a substantial adverse effect on a scenic vista.

The solar facility would be prominently visible from elevated vantage points in the area, such as from surrounding wilderness areas, and the introduction of industrial character and structural visual contrast would result in substantial adverse effects on these views. Mitigation Measures VIS-1 through VIS-4 would reduce the impacts on scenic vistas, but the resulting visual impact would be significant and unavoidable.

Impact: Structural Visual Contrast

CEQA Criterion VIS-3: Substantially degrade the existing visual character or quality of the site and its surroundings.

The introduction of a prominent built facility with considerable industrial character into an existing landscape can cause a substantial degradation of the existing visual character or quality of the site and its surrounding landscape. Mitigation Measures VIS 1 through VIS 4 reduce the visual impact of the Proposed Action or Alternatives, but unavoidable long-term adverse effects would remain.

Impact: Cumulative Construction-Phase and Operational-Phase Visual Alteration

CEQA Criterion VIS-3: Substantially degrade the existing visual character or quality of the site and its surroundings.

The Proposed Action and Alternatives could combine with any of the 16 local energy projects or eight regional energy projects to cause cumulative construction visual effects resulting from airborne dust generation, nighttime construction lighting, staging area disturbances, and batch plant operations. Cumulative construction impacts would occur where long-term visual effects would be visible to sensitive viewing populations. Cumulative operational impacts include the potential to result in significant cumulative night lighting impacts on night sky visibility in the Chuckwalla Valley and for users of nearby designated wilderness and the Joshua Tree National Park. Mitigation Measures VIS-3, BLM-VIS-2, AQ-SC-3, AQ-SC-4, and BIO-8 would reduce the severity of the cumulative construction visual impacts and Mitigation Measures VIS-1, VIS-2, VIS-4, and BIO-8 would reduce the severity of cumulative operational visual impacts, but visual impacts from both would not be reduced to levels that would be less than significant.

Impact: Cumulative Night Lighting Impacts

CEQA Criterion VIS-4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

The Proposed Action and Alternatives could combine with any of the 16 local energy projects or eight regional energy projects to cause cumulative night lighting impacts on night sky visibility in the Chuckwalla Valley and for users of nearby designated wilderness and Joshua Tree National Park. Mitigation Measures VIS 3 and BLM-VIS 2 would reduce the severity of the cumulative night lighting effects. However, the cumulative impact to night sky visibility in the Chuckwalla Valley and for users of nearby designated wilderness and JTNP would remain significant and unavoidable.

Wildlife Resources

Impact: Mojave Fringe-Toed Lizard and Special Status and Migratory Birds

CEQA Criterion WIL-1: Have a substantial adverse direct or indirect effect on any candidate, sensitive, or special-status species identified by local, state, or federal agencies.

It is uncertain whether sufficient private lands meeting the habitat criteria may be available for purchase or whether off-site enhancement and restoration can feasibly and effectively restore natural sand transport function and aeolian sand habitat values per Mitigation Measure WIL-10. Mitigation Measure WIL-10 would reduce impacts on sand habitats and the sand transport corridor, but there may be significant and unmitigable direct and indirect effects on Mojave Fringe-Toed Lizard and its habitat Mitigation Measure WIL 7 would reduce most impacts to special status birds to less than significant, but the potential impacts of avian collision with project facilities and "lake effect" cannot be fully evaluated and could remain significant.

4.22.4 Significant Irreversible and Irretrievable Changes

The BLM NEPA Handbook (H-1790-1 Sec. 9.2.9), the CEQ guidelines for implementing NEPA (40 CFR 1502.16), and CEQA Guidelines Section 15126.2 require a discussion of any irreversible or irretrievable commitments of resources which would be caused by implementation of the Proposed Action or one of the action alternatives; the relationship between short-term uses and long-term productivity of the environment (see Section 4.23); and any growth-inducing impacts (see Section 4.15).

Resources irreversibly or irretrievably committed to a proposed action are those used on a long-term or permanent basis. This includes the use of nonrenewable resources such as metal, wood, fuel, paper, aggregate and other natural resources. These resources are considered irretrievable in that they would be used for a proposed action when they could have been conserved or used for other purposes. Another irreversible or irretrievable commitment of resources could be the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment.

The Proposed Action or any action alternatives would irretrievably commit resources over the 30-year life of the Project. Construction of the Palen Solar Project would require use of nonrenewable

resources. During project operations, oil, gas, and other nonrenewable resources would be consumed for maintenance purposes, although on a limited basis. After 30 years, the Project could be decommissioned and the land returned to its pre-project state; however, depending on economic or other circumstances, the actual life of the Project could be longer or shorter. In the event that the Project is decommissioned, some of the resources on site could be potentially retrieved for re-use or recycling. However, full site recovery to its pre-project state may not be possible given the 30-year life-span of the Project and the many unknown variables that could affect the site. Sensitive desert habitats have potentially lengthy recovery time from disturbances such as grading and site development.

The Palen Solar Project is a renewable energy project intended to generate solar energy to reduce reliance on fossil fuels. Over the 30-year life of the Project, this renewable energy project would contribute incrementally to the reduction in demand for fossil fuel used to generate electricity, thereby resulting in a positive effect of the commitment of nonrenewable resources to the Project.

Chapter 5

Consultation and Coordination

CHAPTER 5
Consultation and Coordination

5.1 Interrelationships

BLM's authority for the Proposed Action includes Federal Land Policy and Management Act (FLPMA) of 1976 [43 United States Code (USC) 1701 et seq.] and BLM's Solar Energy Development Policy. The FLPMA authorizes BLM to issue right-of-way (ROW) grants for renewable energy projects. BLM's Solar Energy Development Policy provides policy guidance on early coordination with Federal land managers and stakeholders, the term of solar energy right-of-way authorizations, diligent development requirements, bond coverage, Best Management Practices (BMPs), and BLM access to records.

The BLM coordinates its fire management activities with the actions of related federal and state agencies responsible for fire management. The Federal Wildland Fire Policy is a collaborative effort that includes the BLM, USFS, National Park Service (NPS), USFWS, Bureau of Indian Affairs, the National Biological Service, and state wildlife management organizations. The collaborative effort has formulated and standardized the guiding principles and priorities of wildland fire management. The National Fire Plan is a collaborative interagency effort to apply the Federal Wildland Policy to all Federal Land Management Agencies and partners in state forestry or lands departments. Operational collaboration between the BLM, USFS, NPS, and USFWS is included in the Interagency Standards for Fire and Fire Aviation Operations 2003. This federally approved document addresses fire management, wildfire suppression, fuels management and prescribed fire safety, interagency coordination and cooperation, qualifications and training, objectives, performance standards, and fire management program administration.

5.1.1 U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) has jurisdiction to protect the aquatic ecosystem, including water quality and wetland resources, under Section 404 of the Clean Water Act. Under that authority, USACE regulates the discharge of dredged or fill material into waters of the United States, including wetlands, by reviewing proposals to determine whether they may impact such resources and, thereby, are subject to Section 404's permit requirement. The USACE may grant authorization under either an individual permit or a nationwide permit to address operations that may affect the ephemeral washes on the project site. The evaluation for jurisdictional waters that was performed on the site for the Palen Solar Power Project (PSPP) determined that the ephemeral drainages did not to conform to the requirements for designation as jurisdictional waters of the U.S., and discussions with the USACE indicated that the drainages would not be considered jurisdictional waters of the U.S. Because the Palen Solar Project (Project) is proposed within the same footprint as was analyzed in the PSPP PA/FEIS and for other reasons, the Project would similarly not affect waters of the U.S. and therefore would also not require a Section 404 permit.

5.1.2 California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW), formerly the California Department of Fish and Game (CDFG), protects fish and aquatic habitats within the State through regulation of modifications to streambeds, under Section 1602 of the Fish and Game Code. CDFG regulates activities that could divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California that the agency has designated as one that is used by or provides benefit to a fish or wildlife resource. The agency also evaluates potential impacts to vegetation and wildlife resulting from disturbances to waterways during its permitting process. The BLM and the Applicant have provided information to CDFW to assist the agency in its determination of the impacts to streambeds and identification of permit and mitigation requirements. As part of the PSPP, the PSPP applicant filed a Streambed Alteration Agreement (SAA) in November 2009. Compliance with the requirements of SAA provisions is among the mitigation measures that were identified in the PSPP PA/FEIS that have been included for the Proposed Action (Mitigation Measure VEG-11).

CDFW also has the authority to regulate potential impacts to species that are protected under the California Endangered Species Act (CESA) (Fish and Game Code §2050 et seq.). Accordingly, the PSPP applicant filed an application for a California Endangered Species Act Section 2081 (B) Incidental Take Permit and Revised Desert Tortoise Technical Report in January 2010. Evaluation of compliance with the requirements of incidental take authorization would be evaluated as required by the adopted mitigation measures.

5.1.3 California Department of Transportation

The California Department of Transportation (Caltrans) has jurisdiction over encroachments to Caltrans facilities and related easements and rights-of way (ROW). Caltrans approval would be required prior to the installation of a locked gate in the I-10 right-of-way fence, for maintenance of the I-10 fence and gate, for the installation of desert tortoise exclusion fencing along I-10 within the Caltrans ROW, and potentially also for the transport of hazardous materials or other deliveries. Compliance with Caltrans requirements would be required by the implementation of recommended conditions of certification/mitigation measures (see, e.g., WIL-1 [desert tortoise fencing], TRANS-1 [roadway use], TRANS-2 [hazardous materials transport], TRANS-4 [over-sized load permits]).

5.1.4 California Energy Commission

The California Energy Commission (CEC) has exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 megawatts (MW) or larger. CEC certification is in lieu of any permit required by state, regional, or local agencies and by federal agencies to the extent permitted by federal law (Cal. Pub. Res. Code §25500). The CEC must review power plant applications for certification to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Res. Code §25519) and compliance with applicable governmental laws or standards (Pub. Res. Code §25523 (d)). The PSPP was approved by the CEC in December 2010. Since the Project does not propose to use thermal electric power technology, the CEC is not an authorizing entity for the Project.

5.1.5 Riverside County

The Applicant has requested that the County of Riverside enter into a water supply contract between the Applicant and the County. The contract would authorize the purchase of construction water from two wells operated by the Riverside County Service Area (CSA) 51 in Lake Tamarisk, at Desert Center. The County has discretionary authority to approve a water supply contract; therefore, this act requires CEQA review of the solar facility (Public Resources Code. Section 21065(b), CEQA Guidelines Section 15378(a)(2)). Pursuant to CEQA Guidelines Section 15162, the County of Riverside intends to rely on this Supplemental EIS/EIR to provide the environmental review required by CEQA for the County's decision regarding the approval of a water supply contract.

5.1.6 South Coast Air Quality Management District

The project site is located in the Mojave Desert Air Basin and is under the jurisdiction of the South Coast Air Quality Management District (District). The District issued a Final Determination of Compliance (FDOC) for the PSPP on December 1, 2010. The Project is proposed within the same footprint as the PSPP and is therefore located within the Mojave Desert Air Basin and subject to the District's jurisdiction. Coordination with the District for the Project is ongoing. Compliance with District rules and regulations would be accomplished via the implementation of Mitigation Measures AQ-SC-1 through AQ-SC-8 (see Section 4.2.4, Mitigation Measures).

5.2 U.S. Fish and Wildlife ESA Section 7 Consultation

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over threatened and endangered species listed under the Endangered Species Act (ESA) (16 U.S.C. §1531 et seq.). Formal consultation with the USFWS under Section 7 of the ESA is required for any federal action that may adversely affect a federally listed species.

Formal consultation with the USFWS under Section 7 of the ESA for the PSPP was initiated in March 2010 and concluded with the June 2, 2011, issuance of a Biological Opinion (BO) related to potential impacts to the federally threatened desert tortoise and its designated critical habitat. Conservation measures were identified in the BO to reduce adverse impacts to this species.

Based on 2015 and 2016 updated biological surveys, the Applicant's consultant (Ironwood) has prepared a new Biological Resources Technical Report (BRTR). The BRTR describes project resources, and provides a description of methods and results of biological resource surveys and investigations conducted between 2009 and 2016 for the PSPP, PSEGS, and Palen Solar Project. BLM approved the BRTR in April 2017.

A revised Draft Biological Assessment (BA) that outlined the changes and effects of the PSEGS relative to the PSPP was reviewed by the BLM in 2013. The BLM is currently reviewing a new Draft BA for the PSP, which will be submitted to USFWS to initiate Section 7 consultation. The USFWS will use the Draft BA to issue a BO.

5.3 Tribal Consultation and National Historic Preservation Act Section 106 Compliance

The BLM fulfills agency responsibilities for consultation under Section 106 of the National Historic Preservation Act of 1966 (NHPA) (54 USC 30010116) in a variety of ways. Consulting parties include the State Historic Preservation Officer; Indian tribes; representatives of local governments; applicants for federal assistance, permits, licenses and other approvals; individuals and organizations with demonstrated interest in the project; and the public (36 CRF 800.2(c)). Outreach to non-tribal groups is often combined with public scoping meetings required by NEPA.

The BLM consults with Native American tribes on a government-to-government basis in accordance with several authorities including NEPA, Section 106 of the National Historic Preservation Act of 1966 (NHPA) (54 USC 300101), as amended; the American Indian Religious Freedom Act of 1978 (42 USC 1996), as amended; and Executive Order (EO) 13007 (May 24, 1996), concerning Indian Sacred Sites; EO 13175 (Nov. 6, 2000), concerning Consultation and Coordination With Indian Tribal Governments; and the Presidential Memorandum of April 29, 1994 (59 Fed. Reg. 22951 1994). The BLM's tribal consultation policy is found in the BLM 1780 Manual (Tribal Relations) and 1780-1 Handbook (Improving and Sustaining BLM-Tribal Relations).

Starting with the PSPP, the BLM expanded its consultation to include Native American groups not recognized by the federal government. Tribal consultation has been ongoing since 2009 throughout the different iterations of the original Palen project, including the PSPP, the PSEGS and the Project. Sections 5.3.1 through 5.3.3 describe the consultation completed or in progress for each of the three proposed projects.

5.3.1 PSPP

The BLM initiated consultation in the early stages of project planning for the PSPP by certified letter on July 1, 2009. Tribes were invited to a general scoping meeting and project site visit held on January 25, 2010. On February 10, 2010, the BLM Palm Springs Field Office Manager and Archaeologist met with the Fort Yuma Quechan Tribal Council. The BLM provided information on several solar energy projects, including the PSPP, and answered questions. On March 3, 2010, the BLM mailed letters to the below-listed tribes requesting consultation under NHPA Section 106 with tribes, the Energy Commission, the Applicant at that time, the State Historic Preservation Officer, and the Advisory Council on Historic Preservation to develop a Programmatic Agreement (PA) that describes the actions that will be taken by the parties in order to meet their environmental compliance responsibilities for the PSPP.

An initial meeting regarding the PA was held on April 23, 2010 in Palm Desert, to which all interested tribes were invited. They also were notified of a workshop on the PSPP SA/DEIS, held on April 29, 2010, in the BLM Palm Springs Field Office, where, additionally, BLM also held an informational meeting for the tribes on May 25, 2010. The BLM issued a draft PA for the PSPP on June 17, 2010, allowing 30 days for public and Native American comment. Appendix I of the draft PA included a log-to-date of BLM's consultation with specific individuals and groups.

BLM held a meeting in Palm Desert on August 11, 2010, to review and discuss the revised draft PA; some Native Americans were in attendance. At this meeting, representatives of two non-

federally recognized consulting organizations (California Union for Renewable Energy and La Cuna de Aztlan Sacred Sites Protection Circle) expressed concern over geoglyphs and other sacred sites and ancient trails that solar development in the Chuckwalla Valley and on Palo Verde Mesa could affect. Outside of these communications with the non-federally recognized consulting parties, formal consultation efforts with Native Americans identified no additional cultural resources beyond those analyzed in the SA/DEIS that could be impacted by the PSPP.

Thirteen tribes or related entities were identified and invited to consult on the PSPP, including:

- Ramona Band of Mission Indians
- Torres-Martinez Desert Cahuilla Indians
- Augustine Band of Cahuilla Mission Indians
- Agua Caliente Band of Cahuilla Indians THPO
- Morongo Band of Mission Indians
- Twentynine Palms Band of Mission Indians
- Fort Yuma Quechan Indian Tribe
- Colorado River Indian Tribes
- Chemehuevi Reservation
- Colorado River Reservation
- San Manuel Band of Mission Indians
- Quechan Indian Tribe
- Fort Mojave Indian Tribe

A Programmatic Agreement (PA) was executed on October 7, 2010. The PA was prepared pursuant to NHPA Section 106 (16 USC Section 300101; 36 CFR Section 800.14) in consultation with the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, Indian tribes, and other interested parties.

The consultation and discussions revealed tribal concerns about the importance and sensitivity of cultural resources on and near the PSPP site, concerns about cumulative effects to cultural resources, and, further, that the tribes attach significance to the broader cultural landscape. As a result of the tribal consultation process, many important cultural resources were identified in the project study area and incorporated into the PSPP design and analysis.

5.3.2 PSEGS

Consultation in accordance with NHPA Section 106 continued after the PSPP project was sold and the power tower project (PSEGS) began the CEQA and NEPA process. Sixteen tribes or related entities were identified and invited to consult on this project, including:

- Agua Caliente Band of Cahuilla Indians
- Augustine Band of Cahuilla Indians
- Cabazon Band of Mission Indians
- Cahuilla Band of Mission Indians
- Chemehuevi Cultural Center
- Cocopah Indian Tribe
- Colorado River Indian Tribes
- Fort Mojave Indian Tribe
- Fort Yuma Quechan Tribe
- Morongo Band of Mission Indians
- Pauma Valley Band of Luiseno Indians
- Ramona Band of Cahuilla Mission Indians
- San Manuel Band of Mission Indians
- Soboba Band of Luiseno Indians
- Torres Martinez Desert Cahuilla Indians
- Twenty-Nine Palms Band of Mission Indians

On March 22, 2013, a general meeting to introduce the project was held at the BLM Corn Springs campground and the PSEGS project site. BLM staff, Energy Commission staff, and cultural resources staff from the Colorado River Indian Tribes, Agua Caliente Band of Mission Indians, Morongo Band of Mission Indians, San Manuel Band of Mission Indians and the Soboba Band of Luiseño Indians attended.

The BLM notified the tribes listed below about changes to the Proposed project, invited tribes to continue with government-to-government consultation, and asked for input on possible revisions to the Area of Potential Effect (APE) by certified letter on May 10, 2013. In addition, tribes were invited to an informational meeting held in Palm Desert, CA.

On May 16, 2013 BLM mailed letters to the PSPP Consulting Parties proposing a modification to the PA which updated the Project description and allowed for changes in project ownership without requiring further amendments. The proposed amendment was provided for a 30-day review. In this same letter, BLM proposed an expansion of the APE as well as additional studies including: an expanded record search, an expanded literature review, additional Class III survey, a sample survey (Class II). The PA was ultimately modified on November 25, 2017.

On May 20 and May 21, 2013 meetings were held at the Agua Caliente Band of Cahuilla Indians office in Palms Springs and at the Soboba Band of Luiseño Indians office in San Jacinto, respectively. BLM staff, Energy Commission staff, and tribal cultural resources staff attended. Topics discussed at these meetings included project schedule, the draft ethnographic report, and tribal concerns.

During these meetings tribes consistently requested analyses that incorporated landscape perspectives. In addition, they requested that ethnographic interviews be conducted to identify resources sensitive resources of interest to tribes that might be impacted by PSEGS. The requested ethnographic interviews and associated field visits were conducted during the week of July 15, 2013. This study identified 11 sensitive resources of interest to tribes, many previously recorded prehistoric archaeological sites, that may have been subject to adverse impacts as a result of PSEGS.

In a letter dated July 29, 2013 BLM notified tribes of the release of the Draft Supplemental EIS, provided the website where it could be found, and requested government-to-government consultation to ensure that any concerns about the project were fully incorporated into the analysis. Many studies related to cultural resources and tribal concerns were still in process when the DSEIS was published.

On August 14, 2013 the Acting BLM Palm Springs Field Office Manager, Project Manager and Archaeologist met with the CRIT Tribal Council. On September 11, 2013 the Acting BLM Palm Springs Field Office Manager, Project Manager and Archaeologist met with Quechan Tribal Council and Cultural Committee Members. In both cases the BLM provided information on several energy projects, including the PSEGS, and answered questions.

An additional meeting specifically about PSEGS was held on September 5, 2013 in Blythe, CA. BLM project management and archaeological staff, CRIT legal staff and representatives of the project proponent attended. Concerns expressed included impacts to animals, destruction of cultural resources around the edge of dry lakes, and the need for improved communication between tribes and BLM and tribes and project proponents.

The BLM worked with the SHPO and ACHP to amend the PA for the PSEGS on November 25, 2013.

On September 6, 2014 BrightSource Energy, Inc., and its partner Abengoa Solar, Inc., abandoned the state authorization proceedings at the Energy Commission. As a result, BLM did not complete the Section 106 process or the Final Supplemental EIS for the PSEGS Project.

5.3.3 Palen Solar Project

5.3.3.1 Tribal and National Historic Preservation Act, Section 106 Consultation

The BLM formally initiated consultation with Indian Tribes, other potential consulting parties and members of the public for the latest change in technology of project planning for the Palen Solar Project by certified letter on July 20, 2016. Sixteen tribes or related entities were identified and invited to consult on this project, including:

- Agua Caliente Band of Cahuilla Indians
- Augustine Band of Cahuilla Indians
- Cabazon Band of Mission Indians
- Cahuilla Band of Mission Indians
- Chemehuevi Cultural Center
- Cocopah Indian Tribe
- Colorado River Indian Tribes
- Fort Mojave Indian Tribe
- Fort Yuma Quechan Tribe
- Morongo Band of Mission Indians
- Pauma Valley Band of Luiseno Indians
- Ramona Band of Cahuilla Mission Indians
- San Manuel Band of Mission Indians
- Soboba Band of Luiseno Indians
- Torres Martinez Desert Cahuilla Indians
- Twenty-Nine Palms Band of Mission Indians

The BLM invited the participation of the ACHP in the Section 106 compliance process for this undertaking in accordance with 36 CFR 800.2(b)(l) in a Certified letter dated July 20, 2016. In a letter dated August 8, 2016 ACHP declined to participate.

From August 29 through September 13, 2016, Applied Earthworks cultural resources specialists, conducted Class III surveys of 466.5 acres of the PSP project area. In addition, nine prehistoric archaeological sites outside of the direct APE were revisited. Finally, limited subsurface testing was conducted at two archaeological sites, to determine whether these resources are eligible for inclusion to the NRHP. The crew was accompanied by tribal monitors from the Agua Caliente Band of Cahuilla Indians, Colorado River Indian Tribes, and Soboba Band of Mission Indians.

Government-to-government consultation meetings between BLM Project Manager Jennifer Whyte, BLM Field Office Archaeologist George Kline, and BLM Acting Field Office Manager Vicki Wood or BLM Field Office Manager Douglas J. Herrema and tribal representatives regarding the proposed project and implications for the change to photovoltaic technology took place on of the following dates (see Appendix D for additional details):

- September 13, 2016 – Agua Caliente Band of Cahuilla Indians, Tribal Historic Preservation Officer Patricia Garcia-Plotkin
- September 16, 2016 – Fort Yuma Quechan Tribe, Fort Yuma Quechan Tribe Cultural Committee

In a letter dated September 21, 2016, BLM presented the proposed Area of Potential Effect (APE), proposed the scope of historic property identification efforts, and a Work Plan to Indian Tribes, other potential consulting parties and members of the public for a 30-calendar day period for review and comment. In a letter dated October 20, 2016, the Office of Historic Preservation (OHP) responded that the APE defined for this undertaking is appropriate. In addition, OHP recommend

the Class I records search include the entire 5-mile radius APE to account for indirect effects rather than being limited to the 1-mile direct APE buffer. OHP also recommend continued engagement with Indian Tribes and other consulting parties.

Government-to-government consultation meetings between BLM Project Manager Jennifer Whyte, BLM Field Office Archaeologist George Kline, and either BLM Acting Field Office Manager Vicki Wood or BLM Field Office Manager Douglas J. Herrema and tribal representatives regarding the proposed Area of Potential Effect, suggested identification efforts and the work plan took place on of the following dates (see Appendix D for additional details):

- October 4, 2016 – Colorado River Indian Tribe participants included: the Tribal Council, Tribal Historic Preservation Officer David Harper, Attorney General Rebecca Loudbear, and Deputy Attorney General Nancy Jasculca.
- October 7, 2016 – Twenty-Nine Palms Band of Mission Indians participants included: Tribal Historic Preservation Officer Anthony Madrigal Jr.
- October 25, 2016 – Soboba Band of Luiseno Indians participants included: Cultural Resources Staff Joseph Ontiveros.
- October 26, 2016 – Fort Yuma Quechan Tribe participants included: Fort Yuma Quechan Tribe Cultural Committee.

A government-to-government consultation meeting between BLM and Colorado River Indian Tribe took place on November 28, 2016. Participants included the CRIT Tribal Council, CRIT Director of the Tribal Historic Preservation Office David Harper, CRIT Attorney General Rebecca Loudbear, BLM Palm Springs–South Coast Field Office Manager Douglas Herrema, and BLM California State Director Jerry Perez and California Desert District Manager Beth Ransel. Topics of conversation included the Draft Work Plan. A related phone conversation took place on December 28, 2017.

In January and February of 2017 BLM staff and OHP staff met and corresponded regarding the utility of continuing to use the Programmatic Agreement for the Palen Solar Power Project (executed October 2010 and amended November 2013) for the Palen Solar Project given changes in technology, differences in the APE and the lack of participation of the California Energy Commission. In a letter dated February 23, 2107, the BLM proposed to terminate the Programmatic Agreement and move forward under 36 CFR 800.4-5. OHP agreed to terminate the Agreement in a letter dated February 27, 2017. The BLM subsequently notified tribes and other consulting parties about the termination of the agreement in a letter dated March 9, 2017.

BLM Field Office Archaeologist George Kline and Cultural Resources Specialist Raymond Huaute from the Morongo Band of Mission Indians met on March 29, 2017. BLM provided an update on the status of a variety of transmission and solar projects including the Palen Solar Project.

In late May 2017, the BLM sent a letter to the sixteen Tribes inviting them to attend a field visit with BLM staff to the Project area and surrounding area on June 28, 2017. On June 6, 2017, Diane Versaggi on behalf of Lee Clauss, Cultural Resources Management Director for the San Manuel Band of Mission Indians sent an email response to BLM Field Office Archaeologist George Klein indicating that the Project is outside of Serrano ancestral territory and that the Tribe will not be

requesting consulting party status under Section 106 of the NHPA nor requesting to participate in further consultations.

In a letter dated June 22, 2017, Pattie Garcia-Plotkin, Director, Tribal Historic Preservation Office of Agua Caliente Band of Cahuilla Indians requested government-to-government consultation with the BLM Palm Springs South Coast Field Office pursuant to Section 106 regarding the Project. The Tribe also requested the presence of a tribal monitor during any ground disturbing activities associated with the Project, and indicated that a tribal representative would attend the June 28, 2017 field visit.

On June 28, 2017, the BLM held a field visit to the Project area. All sixteen Tribes were invited to participate. Representatives from the Colorado Indian River Tribes (including the members of the Mohave Elders Committee), Twenty-Nine Palms Band of Mission Indians, and Fort Yuma Quechan Tribe/Fort Yuma Quechan Tribe Cultural Committee participated in the field visit. BLM representatives included BLM Assistant Field Office Manager Janet Cheek, BLM Project Manager Mark DeMaio, BLM Field Office Archaeologist George Klein, and BLM Associate State Archaeologist James Barnes. During the field visit, the Project design was discussed, the results of the historic properties identification efforts were summarized, and the Alligator Rock ACEC and Palen Dry Lake ACEC were visited, where we discussed the Project's potential indirect impacts.

The BLM is in the process of developing determinations of eligibility and findings of effect for the Palen Solar Project. The BLM currently proposes a finding of no historic properties affected for this undertaking.

5.3.3.2 Assembly Bill 52 Tribal Consultation

Under CEQA, AB 52 defines tribal cultural resources (TCRs) as sites, features, places, cultural landscapes, sacred places or objects that have cultural value or significance to a tribe. CEQA requires that impacts to TCRs be identified and analyzed. If impacts to TCRs will be significant, mitigation measures must be implemented to reduce those impacts to the extent feasible (PRC § 21081). Pursuant to AB 52, tribal representatives may be considered experts appropriate for providing substantial evidence regarding the locations, types, and significance of tribal cultural resources within their traditionally and culturally affiliated geographic area (PRC Section 21080.3.1(a)).

Government-to-government tribal consultation was conducted between the County of Riverside and with representatives of Native American tribes identified by the Native American Heritage Commission (NAHC) as being traditionally or culturally affiliated with the project area. Letters including information about the proposed project, maps, and an invitation to consult for the Project were mailed on January 3, 2017. Letters were sent to the following tribes:

- Agua Caliente Band of Cahuilla Indians
- Cabazon Band of Mission Indians
- Cahuilla Band of Mission Indians
- Colorado River Indian Tribes
- Gabrieleno Band of Mission Indians-Kizh Nation
- Morongo Cultural Heritage Program
- Pechanga Band of Luiseño Mission Indians
- Quechan Indian Nation
- Ramona Band of Cahuilla Indians
- Rincon Band of Luiseño Indians
- San Manuel Band of Mission Indians
- Soboba Band of Luiseño Indians
- Torres Martinez Desert Cahuilla Indians
- Twenty-Nine Palms Band of Mission Indians

Of these tribes, a request to consult with the County was received from the Cahuilla Band of Mission Indians, Soboba Band of Luiseño Indians, and Twenty-Nine Palms Band of Mission Indians. Implementation of mitigation measures for tribal cultural resources that were agreed upon with consulting tribes are presented in Section 4.4 (Cultural Resources). The mitigation measures would reduce potential adverse impacts to tribal cultural resources, but not to less than significant.

5.4 Implementation, Monitoring, and Enforcement

If any of the action alternatives is approved, BLM will continue to involve and collaborate with the public during implementation of this Project. Opportunities to become involved during implementation and monitoring could include development of partnerships and community-based citizen working groups. BLM invites citizens and user groups within the project area to become actively involved in implementation, monitoring, and enforcement of decisions. BLM and citizens may collaboratively develop site-specific goals and objectives that mutually benefit public land resources, local communities, and the people who live, work, or play on the public lands.

BLM would monitor activities throughout the life of the Project to ensure that decisions are implemented in accordance with the approved ROD and ROW grant. Monitoring would be conducted to determine whether decisions, BMPs and approved mitigation are achieving the desired effects. Effectiveness monitoring would provide an empirical data base on impacts of decisions and effectiveness of mitigation. Effectiveness monitoring also would be useful for improving analytical procedures for future impact analyses and for designing or improving mitigation and enhancement measures.

Under CEQA, the County of Riverside would implement the required Mitigation Monitoring Program during project construction and operation. This program would ensure that all county-adopted mitigation measures are implemented as adopted.

5.5 Scoping and Public Comment Periods

The BLM and the CEC solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the NEPA and CEQA documents for the different iterations of the original PSPP, as well as the extent to which those issues and impacts would be analyzed in the document. This scoping process (defined in 40 CFR 1501.7) allows consideration of information on the Project and the NEPA and CEQA.

Internal input was provided by BLM and cooperating agency staff, as an interdisciplinary process, to help define issues, alternatives, and data needs. External scoping involved notification and opportunities for feedback from other federal, regional, and local agencies, interest groups, community organizations, tribes, and the public. Comments received during the comment period are a part of the public record. Scoping for each of the three project technologies and processes is described in Sections 5.5.1 through 5.5.3 below.

5.5.1 PSPP

Formal public scoping begins following publication of a Notice of Intent (NOI) to prepare an environmental impact statement for a proposed action. The Notice of Intent to prepare an Environmental Impact Statement for the PSPP was published in the Federal Register on November 23, 2009 (74 Fed. Reg. 61169). Publication of the NOI began a 30-day public comment period, which ended on December 23, 2009. BLM provided a website with information about the PSPP that also described the various methods of providing input on the PSPP, including an email address where comments could be sent electronically. Twenty comment letters were received within the comment period.

On December 11, 2009, the BLM held a Scoping Meeting at the University of California-Riverside, Palm Desert Campus. Seventy-five attendees signed in on a voluntary sign-in sheet.

A scoping report was released for public review and comment in January 2010. The report was also included in the PSPP FEIS Appendix D, Results of Scoping. Three general categories of comments were received: i) issues or concerns that could be addressed by effects analysis; ii) issues or concerns that could result in an alternative and/or a better description or qualification of the alternatives; and iii) issues or concerns outside the scope of the EIS.

The BLM also gave a presentation at and participated in the CEC's January 25, 2010, Informational Hearing and Site Visit for the PSPP (held in in Blythe, California. In addition to property owners and persons on the general project mail-out list, notification was provided to local, state and federal public interest and regulatory organizations with an expressed or anticipated interest in this project. Also, elected and certain appointed officials were similarly notified of the hearing and site visit.

Issues analyzed in the PSPP PA/FEIS were summarized in its Section 1.5, Issues Analyzed in this EIS.

5.5.2 PSEGS

No new NOI was published by the BLM, and no formal scoping activities occurred for the PSEGS, because the PSEGS was a Supplemental EIS. Nonetheless, the BLM solicited internal and external input on the issues, impacts, and potential alternatives to be addressed in the PSEGS Draft SEIS as well as the extent to which those issues and impacts would be analyzed in the document at a multi-agency meeting held March 26, 2013, at the University of California at Riverside's Palm Desert Campus, which is located at 75080 Frank Sinatra Drive in Palm Desert, California.

A notice was published by the CEC for an environmental scoping meeting in Indio, California, and public site visit for the PSEGS on February 20, 2013. The public was encouraged to provide comment at the informational meeting, and to participate in the CEC proceeding as formal Intervenors, however, CEC did not establish a formal scoping or comment period.

5.5.3 Palen Solar Project

The Palen Solar Project did not have a new NOI or NOP published since the document being prepared is a Supplemental EIS/EIR. The original NOI was published in the Federal Register for

the PSPP on November 23, 2009. In order to provide the public with an opportunity to comment on the revised PV project application, the BLM mailed notices (as described below) and issued press releases to open a public comment period for the Palen Solar Project. The comment period began on June 29, 2016, and ended on September 3, 2016. This provided the public and regulatory agencies an opportunity to comment on the scope of the Supplemental EIS/EIR and to identify issues that should be addressed in this environmental document.

To announce the comment period, public notices were mailed on June 15, 2016, and July 18, 2016, notifying interested parties of two planned public meetings concerning the Project. The meetings were held on June 29, 2016, and August 4, 2016 at the Palm Springs City Hall Council Chamber. Twenty-six attendees signed in on a voluntary sign-in sheet at the first meeting and twelve attendees signed in on a voluntary sign-in sheet at the second meeting. A total of 14 written comment letters were submitted and 8 individuals presented oral comments during the public meetings. The comments and questions received during the public comment period have been reviewed and considered by the BLM to determine the appropriate issues to be addressed in this Supplemental EIS/EIR and in the selection of alternatives to be carried forward for further analysis.

A Comment Summary Report was prepared, and it is available on BLM's ePlanning website at https://eplanning.blm.gov/epl-front-office/eplanning/planAndProjectSite.do?methodName=dispatchToPatternPage&currentPageId=98931

Comment topics included: purpose and need, cultural resource impacts, impacts on wildlife and habitats, impacts on recreational areas and recreationists, air quality, and impacts on hydrological resources. Comments were received from members of the public; federal, regional, and local agencies and organizations; and tribal representatives, including:

- Basin & Range Watch,
- La Cuna de Aztlan Sacred Sites Protection Circle,
- Sierra Club,
- National Park Service,
- Conservation for Biological Diversity,
- Joshua Tree National Park Chief of Cultural Resources,
- Colorado River Indian Tribes, and
- The Metropolitan Water District of Southern California.

5.6 NEPA and CEQA Document Public Comment Periods

5.6.1 PSPP

The BLM and the CEC issued a joint Staff Assessment/Draft Environmental Impact Statement for the PSPP for public and agency review and comment on March 18, 2010. The comment period ended on July 1, 2010. Eight comment letters were received from members of the public and federal, regional, and local agencies and organizations:

- Joshua Tree National Park
- Center for Biological Diversity
- California/Nevada Desert Energy Committee of the Sierra Club (Sierra Club)
- The Wilderness Society and the Natural Resources Defense Council (NRDC)

- California Unions for Renewable Energy (CURE)
- Western Watersheds Project
- Metropolitan Water District of Southern California

Summary of Issues Raised by Topic

Following is a summary of the comments on the 2010 SA/DEIS:

Consistency of the Proposed Action with the CDCA Plan, NECO Plan and other Plans

- *Relationship with Master Plans and Policies:* Comments questioned the relationship of the Proposed Action to the goals and policies of the BLM's master planning documents (e.g., the CDCA Plan and NECO Plan)
- *Adequacy of Analysis and Land Use Considerations:* Comments questioned the adequacy of analysis, including analysis of resource impacts.

Consistency of the PA/FEIS with NEPA and FLPMA

- *Consistency with NEPA*: Several comments question whether the environmental review process for the Proposed Action complies with NEPA requirements, including about segmentation, the scope of analysis, the identification of impacts (including cumulative impacts), the identification of adequate mitigation measures, and other requirements of NEPA.
- *Compliance with FLPMA*: Several comments question whether the Proposed Action is consistent with the mandates of FLPMA.

Adequacy of Data Relied Upon

- *New Significant Information Available*: Some comments suggest that the PA/FEIS is inadequate because new information has become available since issuance of the SA/DEIS, including the Energy Commission's RSA and a number of surveys.
- *More and Updated Information Required for Analysis*: Other comments suggest that the PA/FEIS is inadequate because more information is needed to establish existing conditions (e.g., for sensitive species, habitat and connectivity corridors, including MFTL, desert tortoise, MFTL, Western burrowing owl, the golden eagle, Coachella Valley milk-vetch, other special-status wildlife, as well as for the Palen Dune system, and vegetation and cultural resources) or to update references used to define the need for the Project.

Purpose and Need

- *Narrow BLM Statement*: Several comments suggested that the BLM's statement of Purpose and Need is too narrow.
- *DOE's Statement*: Other comments provided input concerning the DOE's statement of purpose and need.

Alternatives

- *Range of Alternatives*: Several comments suggested that the range of alternatives was unreasonably narrow and should be expanded to address impacts, specifically and generally.

- *Alternatives Selection and Analysis*: Other comments allege that the SA/DEIS failed to provide a sufficient foundation for rejecting alternatives from further consideration and proposed that certain of the alternatives should have been carried forward for more detailed analysis.

Supplementation/Recirculation

- *Need to Supplement and Recirculate SA/DEIS.* Comments suggest that supplementation and recirculation of the EIS is required for a variety of reasons.

Biological Resources

- *Adequacy of Baseline Data and Resulting Analysis*: Various comments question the adequacy of analysis, including whether: baseline information or surveys are adequate and, therefore, whether the impact analyses reliant upon them are adequate; the identification of affected special-status species is adequate and, therefore, whether the impact analyses based on these identifications, are adequate; and the cumulative impact analysis is adequate.
- *General Biological*: Various comments express opinions about general biological issues, including: whether impacts can be fully mitigated; concerns with adequacy of compensation mitigation; concerns with toxic compounds to be used for weeds; concerns that recovery from the Proposed Action would be slow, over longevity of mitigation; about the adequacy of commitments for mitigation implementation and flexibility.
- *Vegetation*: Comments state that special-status plants were not adequately evaluated or surveyed.
- *Wildlife*: Comments express concern about bighorn sheep surveys, impacts and mitigation; about insects; about badgers and kit foxes, including relocation concerns; about surveys, impacts and mitigation of burrowing owl; concern about impacts and mitigation identified for Mojave fringe-toed lizards, particularly connectivity and movement; desert tortoise monitoring, impacts, movements, relocation; other special-status wildlife besides desert tortoise; lasting effects to wildlife; the impacts of proposed evaporation ponds and mirrors, including whether the proposed mitigation of such impacts are adequate; and golden eagles, including about the adequacy of the impact analysis and proposed mitigation for impacts on foraging habitat.

Climate Change/Greenhouse Gases

- *Air Quality*: Whether the analysis adequately identifies GHG emissions impacts.
- *Biological Resources*: Whether the analysis of effects of global climate change on the affected environment is adequate, including with respect to the importance of wildlife movement corridors and habitat connectivity and identification of strategies to monitor climate change effects on groundwater or special-status species.
- *Carbon Sequestration*: Whether the analysis of effects of global climate change is adequate, including to what extent the Proposed Action would result in reduced carbon sequestration and/or emission of carbon stored in soil organic matter and vegetation currently located on site.
- *Hydrology*: Whether the analysis of effects of global climate change is adequate, including to what extent climate related changes to hydrologic resources could affect the Proposed Action or be exacerbated by the Proposed Action. Specific issues include drainage, flooding and water supply.

- *Hazards*: Whether the analysis of effects of global climate change is adequate in terms of potential hazards, including increases in potential heat-related hazards, as a result of climate change.
- *Soils*: To what extent the climate change analysis provided in the EIS should address potential changes in erosion patterns as a result of changes in flooding frequency and other drainage issues that could be exacerbated by climate change.

Air Quality

- *Construction-Related Impacts*: Whether the PA/FEIS adequately identifies construction-related impacts of construction exhaust emissions and fugitive dust and identifies adequate mitigation measures.
- *Cumulative Analysis*: Whether the analysis of cumulative air quality impacts relies on an adequate cumulative setting.

Water Resources

- *Groundwater Resources and Water Supply*: Direct, indirect and cumulative impacts to groundwater and connectivity to the Colorado River; water balance, supply and usage (including during construction); cumulative context; and concerns about the effectiveness of proposed mitigation measures and the adequacy of the water model used and graphic representations of historical data.
- *Streams and Other Water Resource Issues*: Water resources impacts to downstream flow and sedimentation, natural drainage channels and streambed effects, including geologic effects; and impacts to vegetation, biological resources and dune ecosystems.
- *Water Use for Cooling*: How the proposed dry-cooled project will affect water resources.
- *Wter Rights*: Whether the Applicant has sufficient rights to water needed for construction and operation of the Project, or whether such rights will be needed to be obtained; the necessary limitations of water rights contracts; and the extent of geographic area considered for the impacts of extracting Colorado River water.

Cultural Resources

- **Use of Programmatic Agreement:** Whether use of a Programmatic Agreement (PA) impermissibly defers evaluation, mitigation and treatment of potential impacts on cultural resources.
- **Native Tribes Consultation:** Need to collaborate with Native peoples of the region, through government-to-government consultation to adequately consider potential impacts of these projects on Native peoples.
- **Adequacy of Data to Determine Impacts and Mitigations:** Whether the analysis of cultural resources, including of the reconfigured alternative, is adequate, in light of the status of pending additional information and analysis on cultural resources.

Public Health and Safety

- *Unexploded Ordnance Risk*: Potential Risk and Effects of Unexploded Ordnance (UXO) and Hazardous Debris
- Heat Transfer Fluid *(HTF Risk)*: Risk of Release of HTF and Components and Waste Classification.

Protest Period

The PSPP went through a protest period after publication of the Final EIS. The protests were not resolved because the Applicant declared bankruptcy before the Director's Protest Report was signed.

5.6.2 PSEGS

The PSEGS Draft SEIS was circulated for a 90-day public comment period from July 31 to October 29, 2013 to consider substantive issues and proposed modifications raised by commenters to develop the Final EIS for the PSEGS. Comments were received from members of the public; federal, regional, and local agencies and organizations; and tribal representatives, including:

- Colorado River Board of California
- Tourism Economics Commission
- The Desert Protective Council

Details on the comments received are not available.

5.6.3 Palen Solar Project

A minimum of 45 days will be provided for commenting on the Draft Supplemental EIS/EIR. Because this Draft Supplemental EIS/EIR does not make changes to the plan amendment, or raise any significant new information concerning the plan amendment, and supplements the previous analysis by adding a new ROW alternative, the comment periods on the Draft EIS for the PSPP Project/Plan Amendment and the SDEIS for the PSEGS fulfilled the BLM's requirement to provide a 90-day comment period on the plan amendment. Therefore, this document is subject to the CEQ's requirement that Draft EISs and Draft Supplemental EISs be made available for 45 days.

Public meetings will be held for oral public comments.

5.7 List of Preparers

Though individuals have primary responsibility for preparing sections of the SEIS/SEIR, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the BLM's Field Office, State Office, and Washington Office review the analysis and supply information, as well as provide document preparation oversight. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during internal review.

Table 5-1. List of Preparers and Reviewers

BLM Palm Springs–South Coast Field Office, California Desert District Office, and California State Office		
Name	**Job Title/Primary Responsibility**	**Office Location**
Doug Herrema	Field Manager	Palm Springs South Coast Field Office
Jennifer Whyte	Interim Project Manager	Colorado State Office
Mark DeMaio	Project Manager	Palm Springs South Coast Field Office

Table 5-1. List of Preparers and Reviewers

George Kline	Cultural Resources Specialist	Palm Springs South Coast Field Office
Greg Miller	Deputy District Manager, CDD	Renewable Energy Coordinating Office (RECO), California Desert District Office
Brandon Anderson	Realty Specialist	Palm Springs South Coast Field Office
Jeremiah Karuzas	Biologist	California State Office
James Barnes	Archaeologist	California State Office
Kim Marsden	Biologist	California Desert District Office
Danielle Ortiz	Biologist	Palm Springs South Coast Field Office
Mark Massar	Biologist	Palm Springs South Coast Field Office
Riverside County		
Tiffany North	County Counsel	Riverside
Aaron Gettis	County Counsel	Riverside
Ken Baez	Planning Department	Riverside
Jay Olivas	Planning Department	Palm Desert
Aspen Environmental Group and Subconsultants		
Susan Lee	Principal-in-Charge	CEQA/NEPA, Quality Assurance/Quality Control
Emily Capello	Project Manager	Quality Assurance/Quality Control, Recreation, Soil Resources, Wildland Fire Ecology
Melissa Do	Environmental Staff	Project Management Assistance Support, Lands and Realty, Special Designations
Scott White	Senior Associate Biologist	Vegetation Resources, Wildlife Resources
Carla Wakeman	Associate Biologist	Vegetation Resources, Wildlife Resources
Elizabeth A. Bagwell, PhD, RPA	Archaeologist	Cultural Resources and Tribal Cultural Resources
Brewster Birdsall, P.E.	Senior Associate	Air Resources, Global Climate Change, Noise
Scott Debauche	Environmental Planner	Environmental Justice, Mineral Resources, Public Health and Safety, Transportation and Public Access
Tatiana Inouye	Associate Planner	Multiple Use Classes, Social and Economic Impacts
Diana T. Dyste, MA, RPA	Senior Cultural Resource Specialist	Paleontological Resources
Philip Lowe, P.E.	Senior Associate	Water Resources
Michael Clayton	Michael Clayton Associates	Visual Resources
Tracy Popiel	GIS Specialist	Graphics
Kati Simpson	Senior Graphic Designer	Graphics

Chapter 6

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References

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